Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

NOVEMBER, 1941

SMIDTH MACHINERY

IN THE SOUTH AMERICAN PORTLAND CEMENT INDUSTRY

The white tacks indicate complete plants, fully equipped with Smidth machinery.

The black tacks indicate plants, mainly, but not fully, equipped with Smidth machinery.

Rotary Kilns, Grinding Mills, Coolers, Pre-Coolers, Pre-Heaters, Dry Process, Air Separators, Agitators, Packers, Extractors, Feeders, Elevators and auxiliary equipment for the manufacture of Portland Cement, etc.

F. L. SMIDTH & CO.

60 EAST 42ND STREET — CEMENT ENGINEERING — CEMENT MACHINERY — NEW YORK, N. Y.

LET WILLIAMS REDUCE YOUR CRUSHING COST

"One Man" Size Stone to 1¼", ¾" or Agstone in One Operation

That is what Williams "Slugger" Hammer Crushers are doing every day. One crushing operation reduces the material to 1¼", ¾" or agstone—and at the rate of 6 to 150 tons per hour, too. Operators are enabled to produce these sizes at a lower cost per ton and with small investment, saving the additional expense of unnecessary primary crushers. Seven sizes to choose from—30 to 150 horse power.

For larger rock and at bigger capacities there is a Williams "Jumbo" Hammer crusher to save you money, too. They reduce ¾ yard to 1¼ yard Power Shovel Loaded Rock to 1¼" in One Operation. This means a big reduction in the cost of foundations, drives and buildings as well as power. Six sizes—50 to 300 tons hourly capacity.

Left: Sectional view showing Williams Hammer principle of crushing.

Look How Sturdily They Are Built

Open View of Williams "Slugger" crusher showing heavy duty hammers, liners and discs.

Write today for additional information on Williams Hammer Crushers.

THE WILLIAMS PATENT CRUSHER & PULVERIZER CO.

800 St. Louis Ave.
St. Louis, Mo.

Sales Agencies Include

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15 Park Row

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37 W. VanBuren St.

Oakland, Calif.
1629 Telegraph Ave.

OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

Williams

PATENT CRUSHERS GRINDERS SHREDDERS

for Accurate Sand Grading ..... the LINK-BELT Rotoscoop

● This dewatering unit will catch the available sand grains of sufficient fineness to meet present day specifications, and deliver the product dry enough to permit truck transportation or for conveying to and from storage by belt conveyors. Made in four sizes, 15′, 12′, 9′ and 6′ diameters. It consists of a large circular steel tank, together with a rotating disk carrying inclined scoops. Capacities varying from 25 to 150 tons per hour, can be lifted from the large settling area, with the water largely displaced from the voids through a squeezing action peculiar to this device. Because the inlet and discharge are on about the same level, little head room is required. It is entirely self-contained, with motor and driving machinery. A unique feature is that the entire area of the tank is submerged, and utilized for settling purposes. The slow motion of the scoop does not hinder good settling. Send for Folder No. 1463.

LINK-BELT COMPANY

Chicago, Philadelphia, Indianapolis, Atlanta, Dallas, San Francisco, Toronto
Offices in Principal Cities

8670

Other Link-Belt Dewatering and Classifying Units

Dewatering Screw

Has a scrubbing action on the sand; keeps the loam and other foreign matter in suspension, to be carried away in the overflow. Thus a clean and dry sand is secured for use where specifications and inspection are rigid. Can be regulated either to reclaim fine sand, or allow it to pass out at the overflow.

Dewatering Flight Conveyor

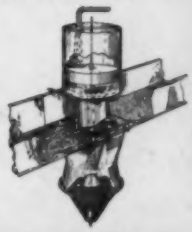
The settling sand is slowly dragged, by the flights, out of the water, up an incline of proper length, and at a proper speed, to give the drainage required. By using a fine sand launder and two dewatering flight conveyors, or by arranging two in series, a coarse and a fine sand can be produced.

Automatic Conical Separator

This less expensive device meets satisfactorily all the requirements in the degree of separation called for by many local specifications. Made in 3 sizes, in capacities up to 2000 gallons of water per minute.

SHAW Classifier

This unit will not only produce clean commercial sand but will also make such special grades as asphalt, filter, engine, gypsum and glass sands. Sand graded and cleaned by this unit will meet the most exacting specifications, particularly where removal of fines is important.



LINK-BELT

HANDLING AND PREPARATION EQUIPMENT

CONVEYORS • ELEVATORS • SCREENS • CLASSIFIERS • DRYERS • CONVEYOR AND DRIVE CHAINS • TRANSMISSION MACHINERY

NOV 15 1941

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Rock Products

Recognized the World Over as the Leader in Its Field

With which has been consolidated the journals *Cement and Engineering News* (founded 1896) and *Concrete Products* (established 1918)

VOL. 44, No. 11, NOVEMBER, 1941

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Audit Bureau of Circulations ★ ABP

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Authentic facts relating to editorial scope and readership analysis.

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Drying clay and reducing it to a fine, dry, uniform powder.

RAYMOND ROLLER MILLS

continue to set the standard for low cost grinding and wide range application. They keep ahead by constant improvements. Such features as Air Separation, Pneumatic Feed Control, Oil Journals, Air Drying System, Automatic Throw-out Attachment, and Whizzer Type Separators, are all original Raymond developments that simplify production and save on operating costs.

Ask for further details

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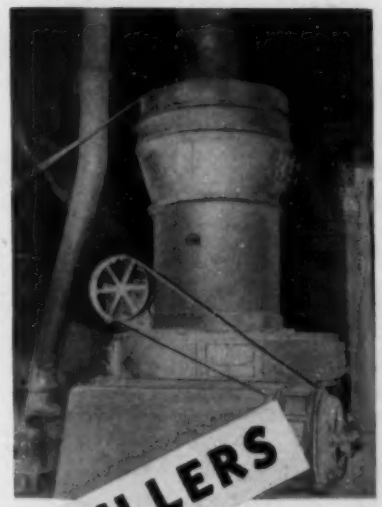

FILLERS

Drying and grinding limestone screenings for producing several grades of material.

WHITING

Pulverizing and separating chalk for whiting used in putty, pigments and fillers.

AGSTONE

Drying and grinding dolomitic limestone to minus 100-mesh fineness for agricultural limestone.

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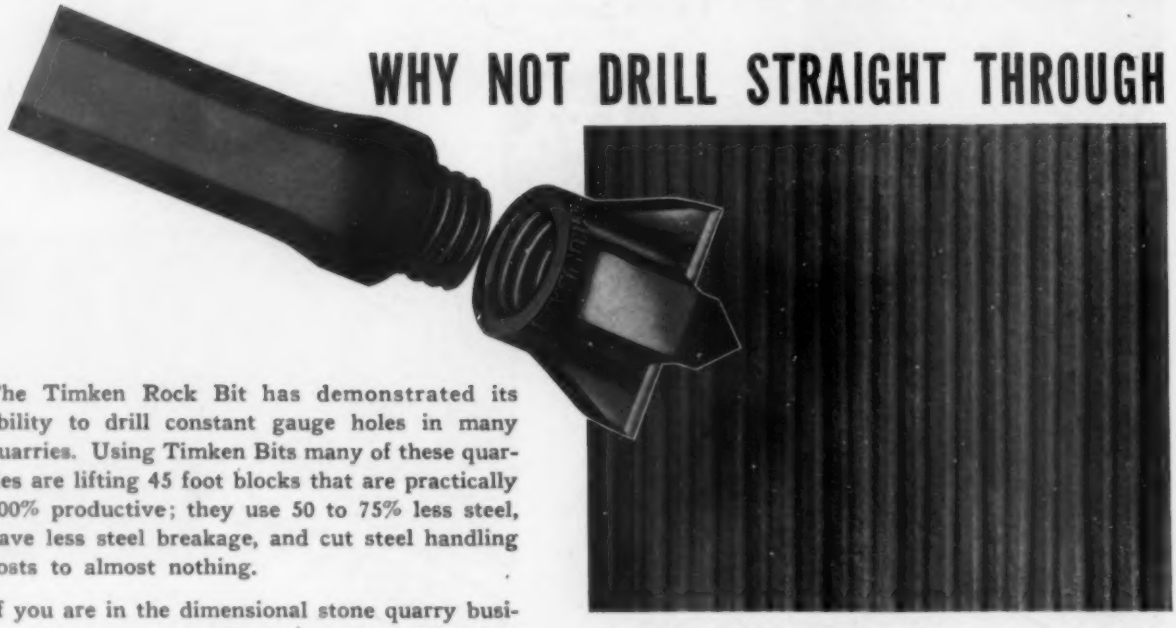
COMBUSTION ENGINEERING COMPANY, INC.
1307 North Branch Street CHICAGO
Sales Offices in Principal Cities • • • In Canada: Combustion Engineering Corporation, Ltd., Montreal

QUARRY OPERATORS

DO YOU STILL STEP 'EM DOWN

An exaggerated diagram of the results obtained with old-fashioned Bits forged as an integral part of the drill steel.

WHY NOT DRILL STRAIGHT THROUGH



An unretouched photograph of the results obtained with Timken Bits.

The Timken Rock Bit has demonstrated its ability to drill constant gauge holes in many quarries. Using Timken Bits many of these quarries are lifting 45 foot blocks that are practically 100% productive; they use 50 to 75% less steel, have less steel breakage, and cut steel handling costs to almost nothing.

If you are in the dimensional stone quarry business how can you afford to use anything but Timken Bits in the face of their amply demonstrated advantages?

Write us for further information—it won't cost you a cent.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

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INSTANTANEOUS DUMPING

SECONDS SAVED
...with Every Load

Being without mechanical operating parts for hoisting and dumping, the Koehring Dumptor has the important second-saving advantage of dumping the load . . . *instantaneously.* The dumping action is gravity controlled. A lever is tripped, body latch released and the load is dumped . . . no complicated body hoist arrangement to consume time. And the load is dumped exactly where wanted . . . *immediately.* Every load is dumped instantaneously and completely... leaving a clean body for every load. Sticky material is loosened by the automatic kick-out pan. The balanced body returns to loading position by force of momentum. Instantaneous gravity dumping cuts round trip time, increases production.

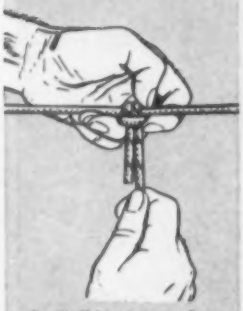
KOEHRING CO • *Milwaukee, Wis.*

Simplicity...no mechanical body hoisting machinery... dumping by gravity, instantaneously . . . saves seconds with every load. Body is dumped by releasing body latch with lever.

KOEHRING HEAVY DUTY

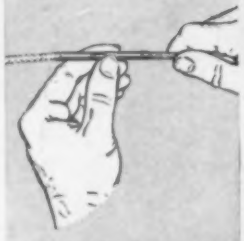
HEAVY-DUTY CONSTRUCTION EQUIPMENT

1. Tie through cartridge.



2. Half hitch branch to main line.

3. Connect main line lengths with square knot.



4. Fuse and cap on end of main line.

IMPORTANT

Branch lines should lead away from main lines at *right angles*. Avoid kinks and small loops.

Two holes (OR A THOUSAND) *that shoot as One!*

Use plain Primacord as the trunk line, unreeling it along the ground above the holes. Connect each branch line at right angles to this trunk, using a half hitch as shown. In this way you can connect two holes or a thousand or more and plan the larger blasts so that each row of holes is detonated in split-second rotation that allows relief of burden. It's all explained in the Primacord Book — free.

PRIMACORD BICKFORD
Detonating Fuse

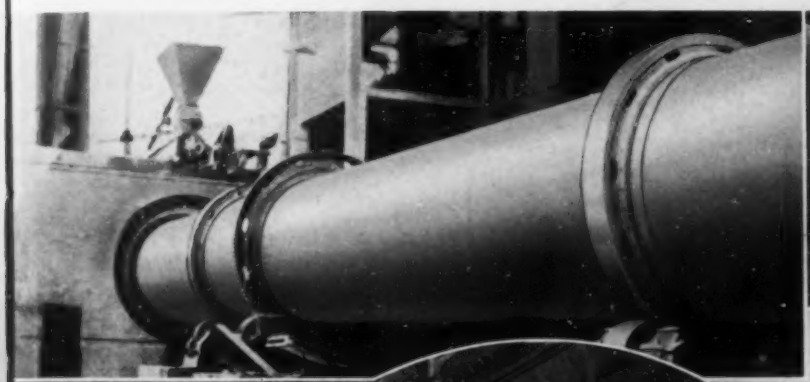
PB-30

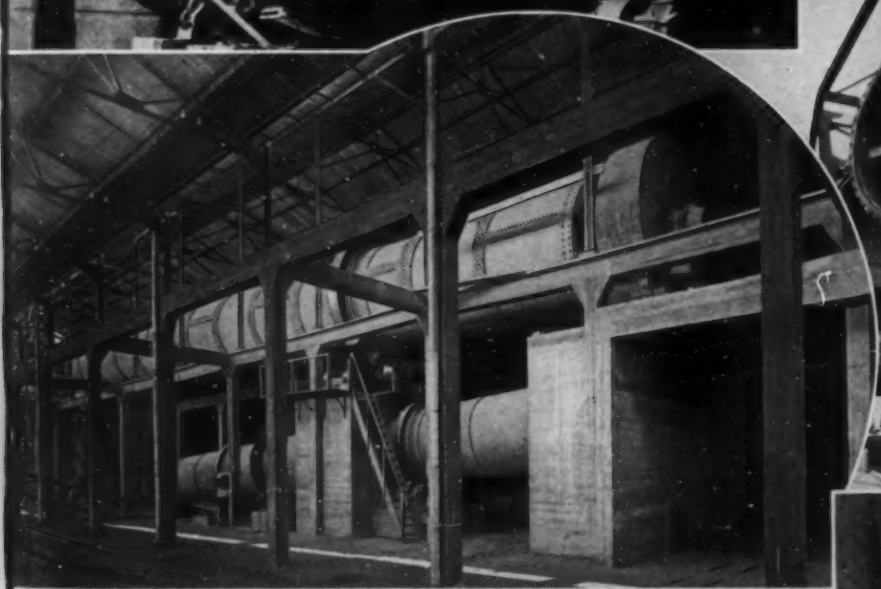
THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONN.

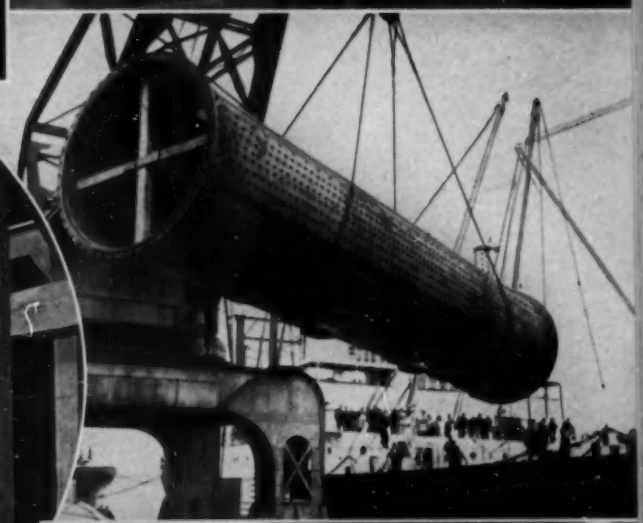
Makers of Cordeau-Bickford Detonating Fuse — and Safety Fuse since 1836

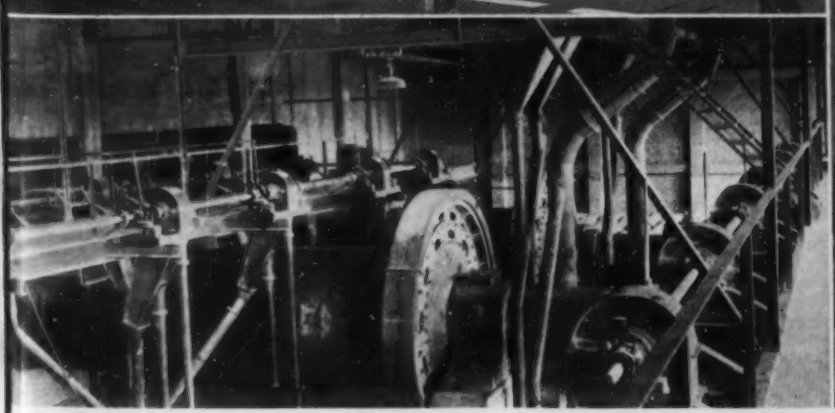
TRAYLOR IN LATIN AMERICA

THIS group of photographs shows a few installations of Traylor cement manufacturing equipment in service in cement plants of good neighbors of the United States, in Latin America. It is a source of gratification to us that Traylor has a prominent part in the production of upwards of a million barrels of cement annually, in Mexico and several South American countries. We feel that every contribution that can be made by the cement scientists and the equipment manufacturers of the United States, that will aid Latin America to become self-sufficient in the matter of cement, the modern material of construction, is a strengthening of the bulwark of Western Hemisphere solidarity.









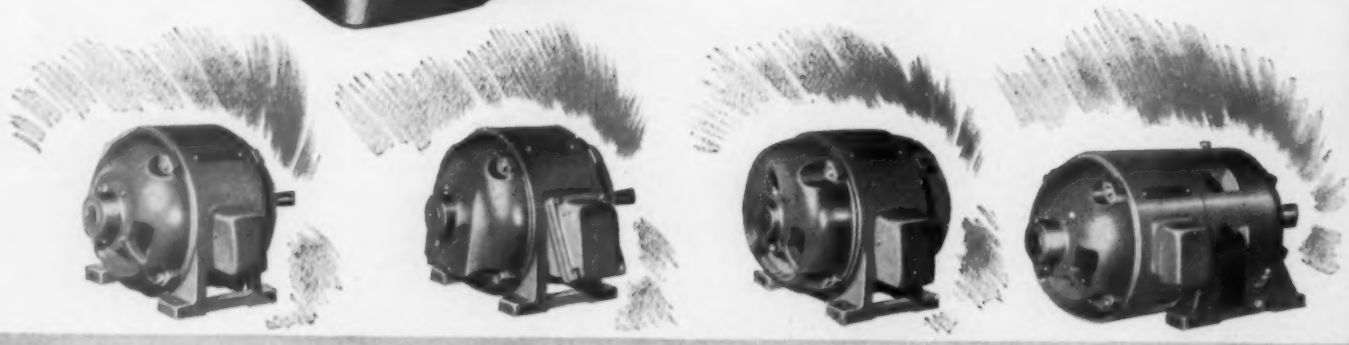
TRAYLOR ENGINEERING & MANUFACTURING CO.
ALLENTOWN, PENNA., U.S.A.

TRI-CLAD protection

REG. U.S. PAT. OFF.

TRI-CLAD Sleeve-bearing Polyphase Industrial Motor Is Most Widely Used

A well-protected, open motor for industry's general-purpose needs. Horizontally mounted—for direct-connected and belt drives—it is economical to operate and suitable for a variety of applications.



TRI-CLAD Ball-bearing Polyphase Motor

Has additional advantage of being mountable in other than horizontal positions. Will take end thrust—for example, from beveled-gear pinion. Similar to the sleeve-bearing motor and, like it, available in many types.

TRI-CLAD Splashproof Ball-bearing Polyphase Motor

For use in wet surroundings, such as dairies, breweries, paper mills, canning factories, etc. Furnished with cast-iron, waterproof conduit box, deflecting end shields, and moisture-resistant insulation.

TRI-CLAD Capacitor-Motor (In sleeve-bearing or ball-bearing types)

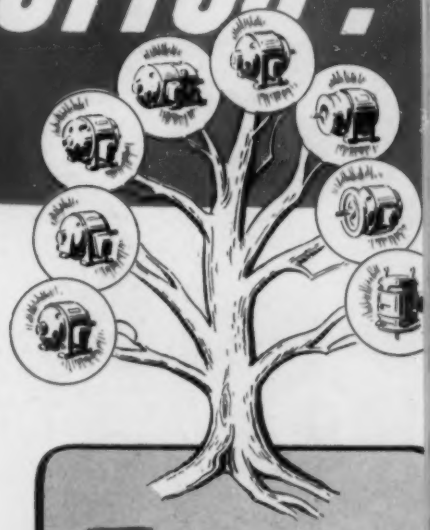
For single-phase operation. Available in types to drive such devices as compressors, pumps, fans, etc. No radio interference; no brushes to wear; quiet operation.

TRI-CLAD Gear-Motor

For economical, compact, low-speed direct or pinion drive. Wide range of output speeds available. Open, splashproof, and capacitor-motor construction. Oil- and dust-tight housings reduce maintenance.

Built for Protection First.....to Last!

n is now a *family affair!*



THE improvements in Tri-Clad motor design are *fundamental* improvements, not just "sales features" to popularize a new model. That's why they are being extended, month by month, to a whole family of G-E integral-horsepower motors—both general-purpose and special types.

So, in these special fields you can now count on getting the same benefits of extra protection that have made the *general-purpose* Tri-Clad motor the acknowledged leader in performance and service life.

All these new members of the Tri-Clad family are the result of basic redesign to meet modern industrial conditions. Each has new performance and convenience features important to its particular field of service. For complete information on the right Tri-Clad motor for *your* application, consult our local office, or write General Electric Company, Schenectady, N. Y.

TRI-CLAD Ball-bearing Induction Motor, with Face-type End-shield Mounting
For close-coupled attachment to machine tools, compressors, pumps, etc. Motor bolted from driven machine. A few standard mounting dimensions apply to many motor ratings.

TRI-CLAD Round-frame, Ball-bearing Induction Motor, with Flange-type End-shield Mounting
For close-coupled attachment, or direct bolting to driven machine. Mounting dimensions are standard, but larger than those of face-type end shield.

TRI-CLAD Vertical Motor
For general-purpose fan, pump, and machine drives in vertical position. Openings protected and bearings designed for vertical operation. Both polyphase and capacitor-motors available with variety of bases.

Today a wider range of your special needs can be filled by the growing Tri-Clad motor family. Every member offers extra strength and longer life because of these 3 "extras":

Extra Protection
AGAINST PHYSICAL DAMAGE
Sturdy, cast-iron frame and end-shield construction.

Extra Protection
AGAINST ELECTRICAL BREAKDOWN
Stator windings of Formex wire, "armored" by synthetic resins against moisture, heat, oil, and abrasion.

Extra Protection
AGAINST OPERATING WEAR AND TEAR
New sleeve-bearing design and improved ball-bearing mounting lengthen life.

In addition, you'll find the modifications to meet special requirements are soundly engineered to give you space-saving, time-saving, and money-saving advantages all down the line. Consult your G-E representative for Tri-Clad horsepower ratings now available.

GENERAL ELECTRIC

"GULF Engineering Service is helping increase our output in three ways"

— says this Superintendent

"WHEN I called in a Gulf engineer recently, I knew we would secure sound lubrication recommendations," says this superintendent. "But I didn't expect Gulf Engineering Service to help us in so *many* ways. Look what we're getting: (1) Improved lubrication, (2) Improved equipment performance, (3) Reduced 'down-time'—and these all add up to a *considerable boost in output!*"

Scores of plants in every industry find that they get *real tangible help* from Gulf in the "battle for production." *Your* plant, too, can benefit from the cooperative services extended by the specialists on Gulf's large staff of trained engineers—Gulf Engineering Service can assist you to install efficient lubrication—and Gulf Periodic Consultation Service can offer useful operating suggestions and help you maintain production at peak efficiency.

Gulf quality lubricants are quickly available to you through more than 1200 warehouses in 30 states from Maine to New Mexico. Write or 'phone your nearest Gulf office today.

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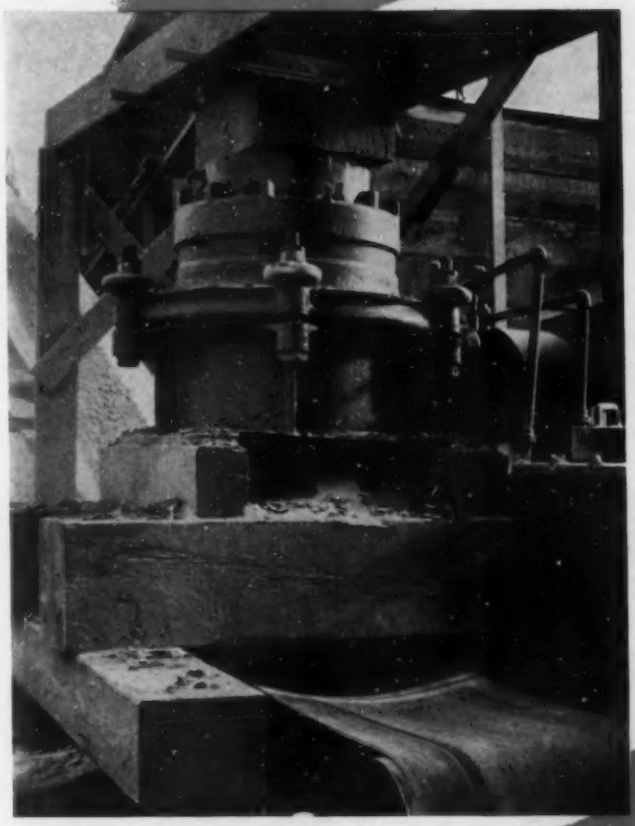
GULF BUILDING · PITTSBURGH, PA.

Small Rock ...3/8 to 1/2 inch, at Low Cost



★ You expect costs to be low with a Telsmith Crusher. The Intercone cuts crushing costs to a surprisingly low figure, even for Telsmith.

But it's the *record low price* you pay—and all the extra crusher features you *get* for your money—that make the Intercone something to shout about!

You get every *advanced* feature of crusher design! And the same superior performance and all-around dependability that has made Telsmith America's standard for crusher value.

You *make more money* with an Intercone on the job. With its flared head and concave, settings for 3/8 and 1/2 in. aggregate are easy and economical. Choke feed . . . high speed crushing *by impact* . . . mean a larger tonnage—faster! The product is finer . . . more cubical . . . better!

You *save more money* with an Intercone on the job . . . operating costs are so surprisingly low. And that goes for maintenance, too. Intercone takes less power . . . less oil . . . less manganese steel. And it's positively protected against tramp iron.

Present performance is *the proof*. In plants all over the country, Intercone Crushers are setting new production and profit records for their owners.

Write for *details*—right *now!*

Lowest Price for Any Reduction Crusher of Equal Size

AND YOU GET ALL THESE FEATURES

● *big capacity* ● *cubical product* ● *wide range of fine sizes* ● *quick, easy adjustment* ● *choke feed* ● *strong steel structure* ● *lead bronze eccentric sleeves* ● *high-grade alloy steel parts* ● *force-feed lubrication* ● *positive protection against tramp iron* ● *lowest headroom.* IC-5

...with the TELSMITH INTERCONE CRUSHER

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In 1938—when Atlas Manasite Detonators were introduced as an important step forward in safer blasting—people naturally asked, "Are they dependable?"

Time has given the answer. In field after field—mining, quarrying, construction, agriculture—Atlas Manasite Detonators have been tried, tested, and approved. Blasters have found that they offer reduced sensitivity to impact and friction—with no sacrifice in efficiency, and no increase in cost.

Today, with the dependability of Atlas Manasite proved by over 100 million detonators used, the real question is—Can you afford *not* to use this advance in greater safety?

ATLAS EXPLOSIVES
"Everything for Blasting"

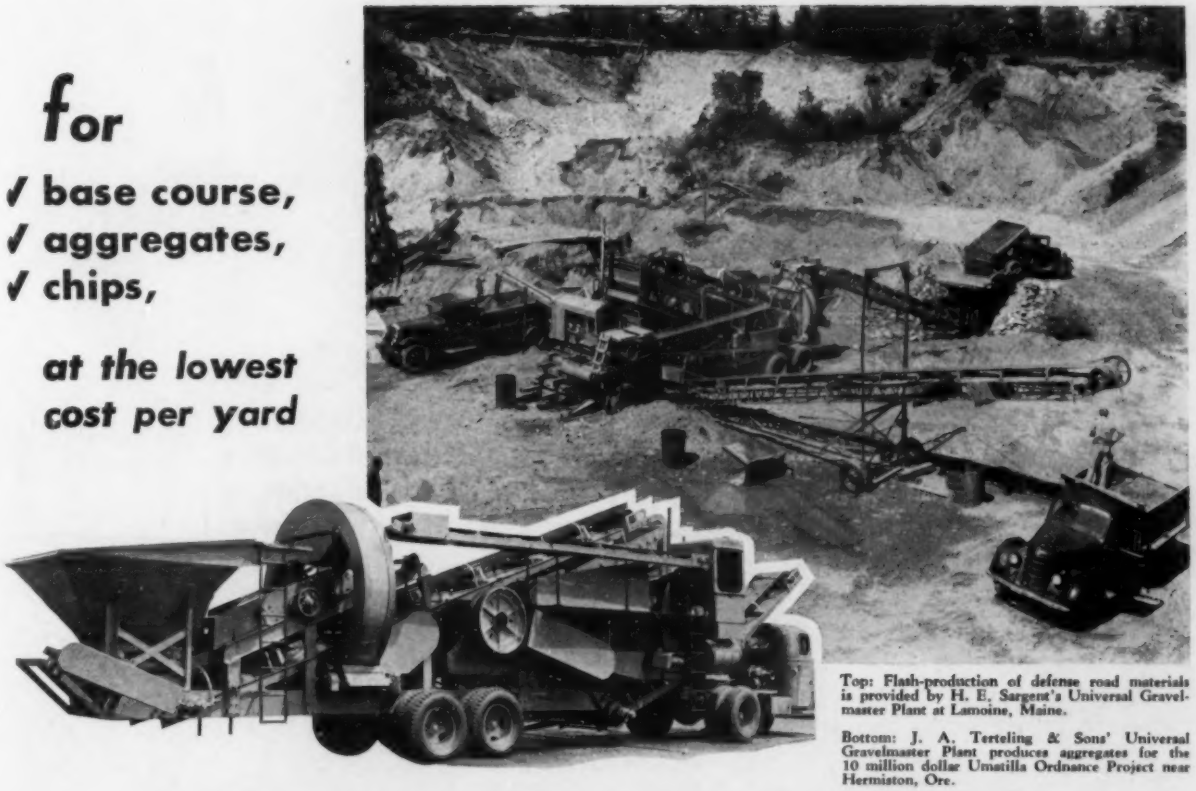
CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • Offices in principal cities • Cable Address—Atpowco

for

✓ **base course,**
✓ **aggregates,**
✓ **chips,**

at the lowest cost per yard



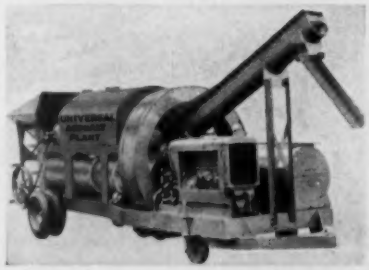
Top: Flash-production of defense road materials is provided by H. E. Sargent's Universal Gravelmaster Plant at Lamoine, Maine.

Bottom: J. A. Terteling & Sons' Universal Gravelmaster Plant produces aggregates for the 10 million dollar Umatilla Ordnance Project near Hermiston, Ore.

it's UNIVERSALS from Coast-to-Coast!

Yes, from Maine to Oregon, profit-proved Universal Crushers and Crushing Plants are getting out crushed rock and gravel for highway departments and contractors at the lowest cost per yard. That's why Universals were chosen and that's why users buy additional Universals when needed—because they turn out more material, faster, and at a lower cost per yard. "Excess baggage" has been eliminated—conveying cycles shortened, crushers weigh less yet are of high capacity. Then, too, a network of dependable dealers make it easier to get service on Universals—what little is needed.

Ask about production costs in any pit or quarry using Universal Equipment — check fuel consumption, bearing life, maintenance costs and other operating factors that affect profits and you'll find out why Universals are so prevalent from coast to coast—yes, and from Alaska to the Isthmus, too!

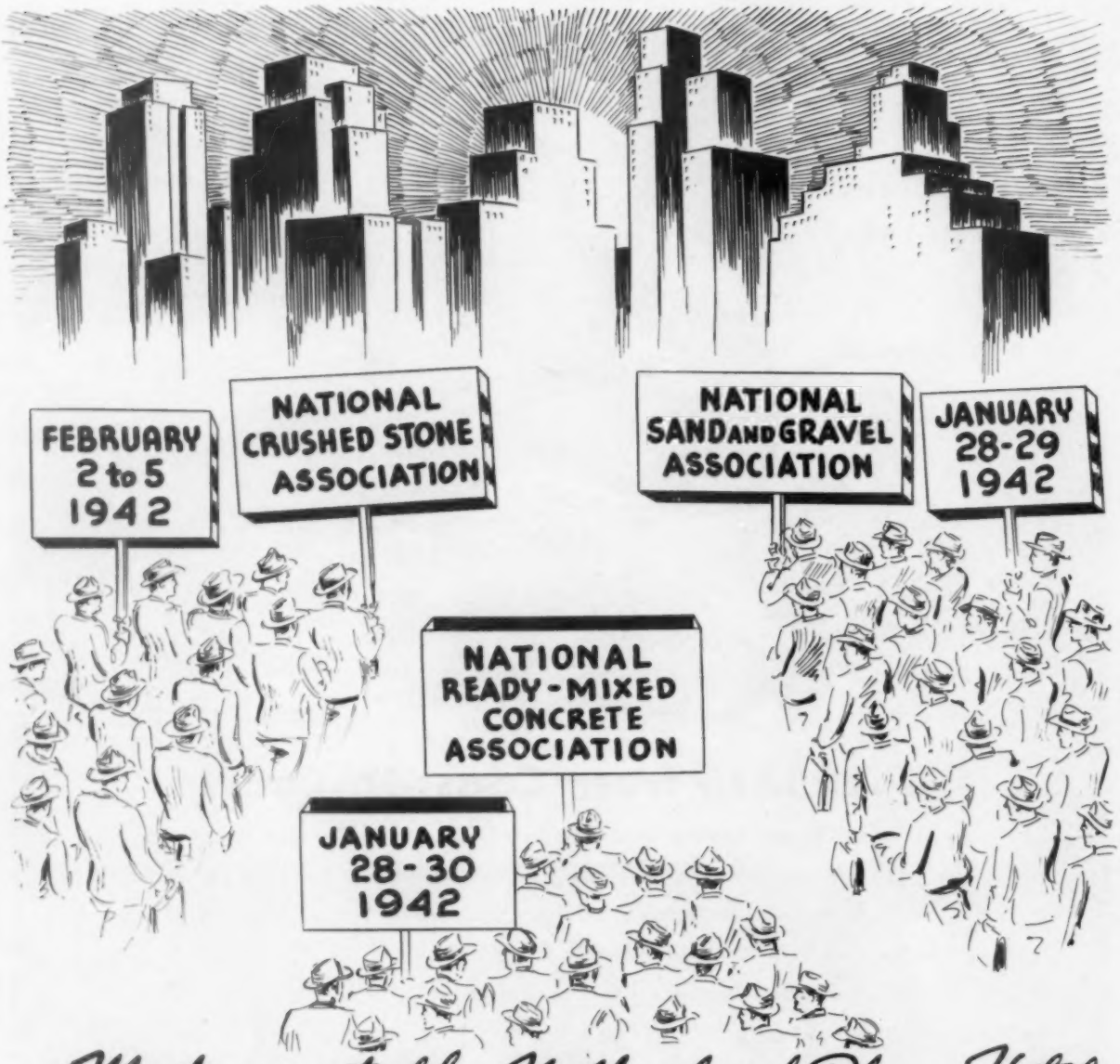


Universal's new "Twin Dryer" Asphalt Plant provides a new all-time "low cost" in hot patching material and small asphalt paving jobs!

UNIVERSAL CRUSHER COMPANY, 617 C Ave. West, Cedar Rapids, Iowa

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS



Meet you at the Netherland Plaza Hotel

CINCINNATI, OHIO

- Most Critical Period in American Industry
- Greatest Opportunity Ever Offered the National Industrial Associations
- Exhibit of Up-to-date Machinery and Equipment
- Opportunity to Confer with Brother Producers
- Renew Old Friendships
- Help Our Nation Solve Its Problems
- Help You Solve Yours

ENOUGH SAID!!!

THERE is no question about the economy of Bucket Loaders. For twenty years they have loaded material cheaper than any other method or machine.

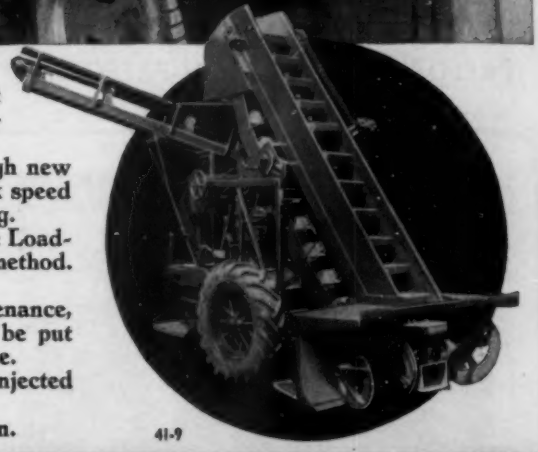
Now the B-G Model 522 offers a new economy through new portability. Not just greater ease in maneuvering—but truck speed towing—with quick and easy hitching—with no dismantling.

This new portability greatly increases the scope that the Loader can cover. It practically obsoletes every other loading method. It makes every other means too expensive.

Simpler systems are now feasible. In highway maintenance, for instance, small roadside stockpiles at the job site can be put down in advance, loaded as needed with the Barber-Greene.

In addition to this new portability, Barber-Greene has injected many other new features into this ingenious design.

Write for complete information. There is no obligation.



41-9

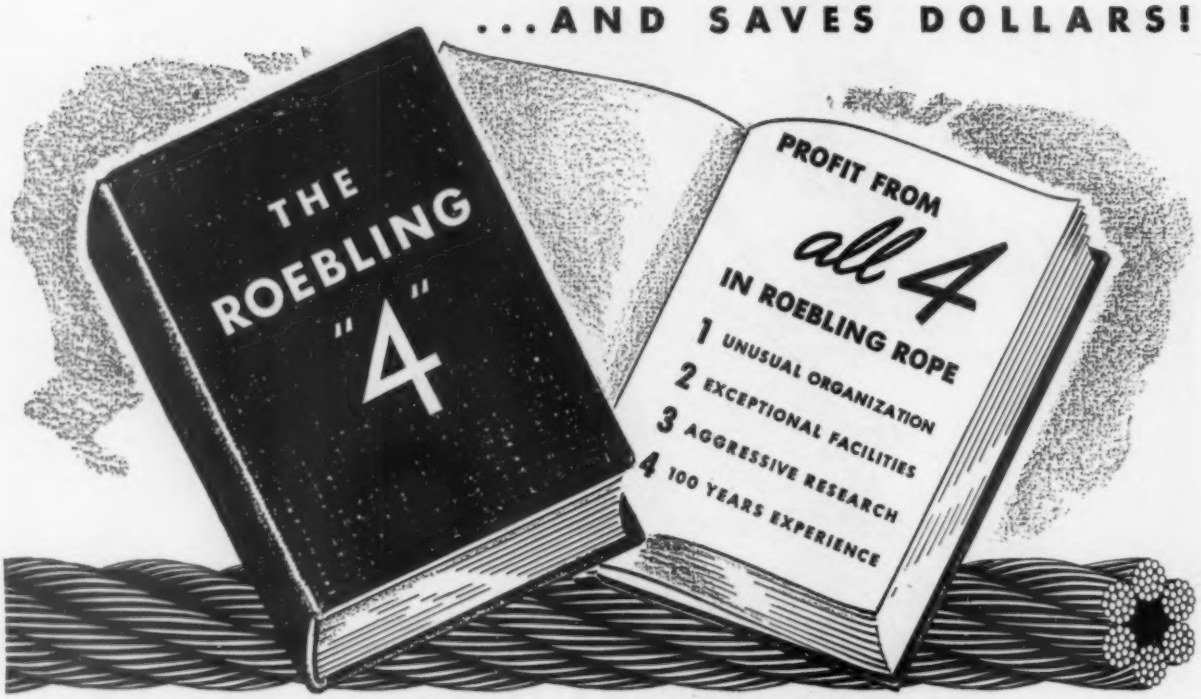
BARBER GREENE

STANDARDIZED MATERIAL HANDLING MACHINES

AURORA ILLINOIS

A WIRE ROPE STORY THAT MAKES SENSE

...AND SAVES DOLLARS!



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"Blue Center" STEEL

WIRE ROPE

PREFORMED AND NON-PREFORMED

Roebling leaves no stone unturned to give you the finest in wire rope. In Roebling "Blue Center" Steel Wire Rope you get the benefit of a combination of advantages obtainable nowhere else. It's a combination we call the "Roebling 4".

Service record after service record has proved that on the basis of *general average* rope operating cost, Roebling "Blue Center" Steel Wire Rope saves money —gives unexcelled performance!

A JOB ENTRUSTED TO ROEBLING VETERANS!

Drawing the wire for Roebling "Blue Center" Steel Wire Rope is a job that calls for great skill and painstaking care.

Most Roebling wire drawers have had from 10 to 35 years of experience!

In Roebling Wire Rope you get the benefit of the extra quality built into the rope by an organization whose skill and experience is unsurpassed.

ROEBLING 1841 1941 100th ANNIVERSARY

JOHN A. ROEBLING'S SONS COMPANY TRENTON NEW JERSEY

Branches in Principal Cities Export Division: 19 Rector St., New York, N.Y., U.S.A. Cable Address "Roebling's", New York

"Hyster" does a locomotive's job!

This cement company recently bought a "Hyster" Winch for moving railroad cars in their limestone quarry. We looked it up to see how they did it and here's the story.

The "Caterpillar" Diesel Tractor equipped with the "Hyster" Worm Drive Winch replaces a locomotive, engineer, fireman and signalman and the cable from the "Hyster" Winch is connected to the rear car. As the shovel operator is unable to see into the cars, it is up to the tractor operator to keep the cars moving along under the shovel dipper so they can be filled uniformly to capacity and yet keep under the maximum weight limit permitted to haul over the main line to their mill. To do this properly a platform was built on the tractor, elevating the operator 7 feet above normal position where he can see into car and watch loading.

By using the "Hyster" Worm Drive Winch with the automatic brake, it was necessary to extend only two controls up to the operator's tower, namely the master clutch and throttle. The cars are moved six feet at a time for the loading and five cars are loaded in an hour. This means 25 moves per hour. Only the tractor operator is required to move the cars. This unit replaces a locomotive engineer, fireman and signalman and the resultant savings can be readily appreciated. It is a simple matter to swing over from locomotive to this new tractor--winch unit. The "Caterpillar" Tractor dealer serving your locality can give you information covering ALL TYPES OF SERVICE POSSIBLE WITH "HYSTER" WINCHES, DOUBLE DRUM HOISTS and TRACTOR CRANES. Write or phone him for details.

Get in touch with your "Caterpillar" tractor dealer!

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CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

●

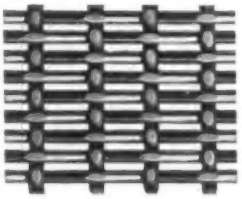
SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

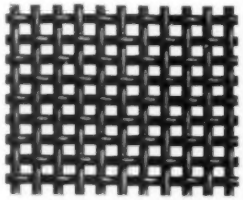
withstand abrasion longer —

endure vibration better —

resist fatigue to the utmost



REK-TANG
long-slot
weave



DOUBLE-CRIMP
square-mesh
weave

The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare REK-TANG Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY
SAINT LOUIS

Rock Products

309 WEST JACKSON BOULEVARD
CHICAGO, ILL.

November 1, 1941

Dear Subscriber:

Washington, D.C.: Defense construction totaling $9,669,867,000 had been scheduled by September 1 this year, the Office of Production Management reported recently. At the same time, government officials predicted that at least another $2½ billion or $3 billion additional construction would be scheduled by the end of 1942. By September 1, less than 40 percent of the military construction had been completed, less than 20 percent of the defense housing and less than 45 percent of the industrial facilities financed by the government. From which it looks as if there would be a good year for construction in 1942, the clamps on private and public works construction notwithstanding.

Chicago, Ill.: V. P. Ahearn, executive secretary, told his board of directors, National Industrial Sand Association, that official Washington is thinking in terms of a 10-year war effort and a national debt of $150 billion.

Chicago, Ill.: The new government order barring non-essential construction is not caused by any shortage of rock products building materials, obviously, but by shortage of such metals as steel, lead, zinc, copper, etc. which enter into plumbing, kitchen equipment, etc. There are plenty of cement, aggregates, lime, gypsum products, concrete products, etc., if one wants to build the foundations and walls.

Washington, D.C.: A member of the board of directors of the National Sand and Gravel Association, at its recent meeting, asked facetiously (?) if additions to psychopathic wards in hospitals were entitled to priority rating.

Detroit, Mich.: Most state and municipal new highway construction may be ruled out under the government order barring non-essential construction, but according to discussions here at the recent meeting of the American Association of State Highway Officials, increases in traffic in most industrial centers have produced "traffic densities" not anticipated before 1945 or 46. Which means that pavements are being worn out much faster than anticipated. And that means more immediate demand for maintenance and repair materials, for the public must have the use of these facilities, defense priorities notwithstanding.

Chicago, Ill.: In luncheon-table discussion by employers in the rock products industries, considerable concern was expressed over the fate of white-collar employes who are being largely overlooked in this increasing-cost-of-living, union-wage-rising racket. One employer said that failure to take them into account would surely drive them into unions. In this connection it is interesting to recall that the National Resources Board study in the middle 1930's indicated that those earning $2000 a year or less spend all they make. Those above this level spend some 65 percent of what they make. For cost of living income adjustments, this might be used, with all those making $2000 a year or less having a monthly bonus percentage based on the cost of living index apply to their total income. For those making more than $2000 it could apply to all of the first $2000 and to 65 percent of the amount of income received above $2000. Both the National Industrial Conference Board and the Bureau of Labor Statistics, Department of Labor, have cost-of-living indexes - not only for the country as a whole but for many leading cities separately.

Boston, Mass.: One of us "finds New England conservative as compared with the rest of the country; producers do not buy machinery unless they absolutely need it". (Don't the editor know, though, being a Massachusetts Yankee himself!) The traveling one continues: "All filling stations are dark from Ohio east after 7 p.m., and the hotels are going hog-wild from the so-called boom". This, evidently, is the natural sequence of the East getting the lion's share of defense spending.

New Haven, Conn.: A ready-mixed concrete producer here has one of those truck-mounted mixers with a skip and hoist for delivering concrete up to heights of 40 ft. or more. On the surface it appears to be contractors' equipment and not for ready-mixed producers. However, this producer uses it to get "second-story" business, and the reason appears a legitimate one notwithstanding that discussion at the Ready-Mixed Concrete conventions brought out that ready-mixed producers should keep away from handling and service equipment.

Chicago, Ill.: You may want to check these figures against wage demands now being made on you: Average hourly earnings in 24 manufacturing industries have increased sharply since October, 1940, according to statistics compiled by the divison of industrial economics of the National Industrial Conference Board covering about 2,000,000 wage earners. The sharpest increases in average hourly earnings have been, with few exceptions, in the industries which have received the largest volume of defense contracts. In the iron and steel industry the increase amounted to 13.6¢ an hour, or 15.9 percent. Hourly earnings in this industry are now the second highest of the 25 manufacturing industries, being exceeded only by the average in the automobile industry.

Chicago, Ill.: An industrial sand producer said that when he recently signed a new closed-shop, union contract with his employes, they assured him that if depression came and it was necessary, they would cheerfully accept cuts in wages. It seemed to be a rather unique experience. Asked if he had that part of the agreement in writing, he said: "No indeed"; at which there was a laugh. Nevertheless, we think all of us are too ready to believe the cynical rather than the kindly interpretation of any such statements.

Mexico City, Mex.: After Mexico expropriated the American and British petroleum properties, a government-owned company officered by former native employes and labor union executives was established to operate the properties, presumably in the interests of the said unions which controlled the government. Recently the unions have been using full-page advertisements in the newspapers in which it is said that the Petroleos Mexicanos (the government oil company) demanded: "Constant and permanent reduction of personnel, on the basis of allowing the administration (Petroleos Mexicanos) facilities to choose workers who shall be dismissed, without regard to seniority rights; renovating the union's internal structure to meet the desires of the employes; refusal of the company to increase the number of confidential employes (those who are not subject to union contracts and are considered apart from unionists in times of pay and personnel slashings), the company forgetting that its very legal and economic origin is closely bound up with national interest and absolute respect for the law; that the worker's pay be cut with the pretext of implanting scales of a general nature, thereby breaking the economic unity of the award of December 18, 1937 (which granted the workers full pay for their strike against the companies in the spring of that year; a 12-day shutdown, and all demands with regard to new working conditions with the companies) even though that award has been accepted as a guide for the solution of problems in the oil industry."

The Staff

Serving the Cement Plants

FULLER ROTARY COMPRESSORS

HAVE MANY APPLICATIONS

SLURRY AGITATION

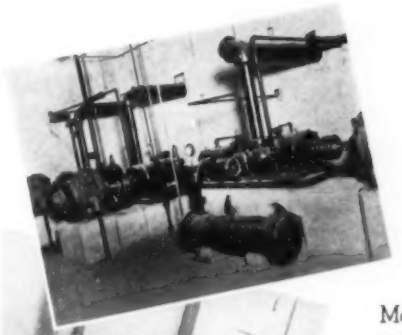
FUEL, NATURAL GAS

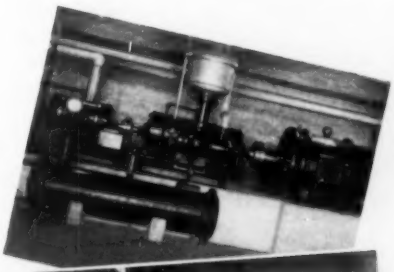
MACHINE SHOPS

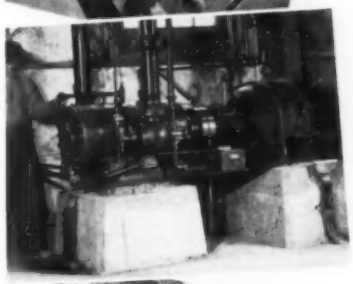
QUARRIES

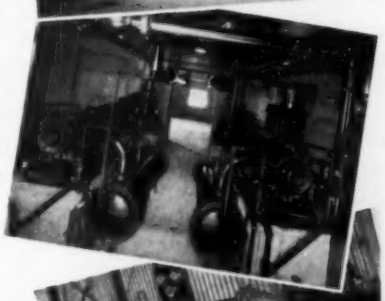
FULLER-KINYON SYSTEMS FOR DRY RAW MATERIALS, CEMENT, FLUE DUST, PULVERIZED COAL

VACUUM PUMPS FOR SLURRY FILTERS



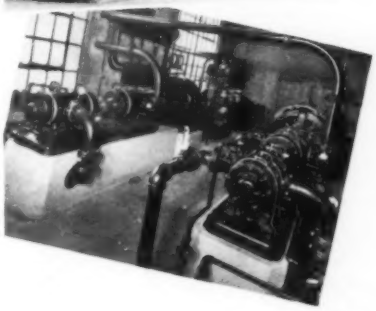


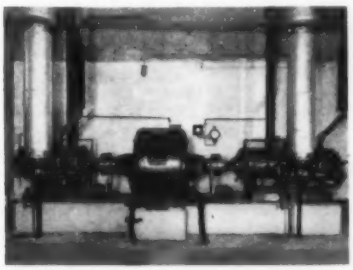


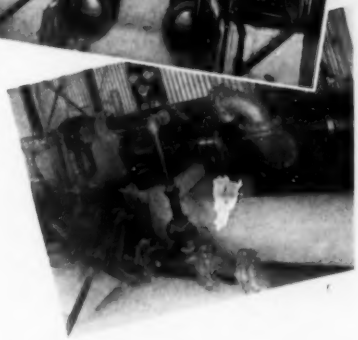


More and more cement plant engineers and superintendents are becoming Fuller Rotary conscious. They're discovering that Fullers are the thing to use for long, continuous service at low operating and maintenance expense. Once a Fuller has been installed, and air demands increase, it invariably follows that additional Fullers are purchased.

Fuller Rotaries have many advantages. When you need additional air capacity, don't overlook the possibilities of Fullers. Our engineers will be only too glad to make recommendations to satisfy your needs.







FULLER COMPANY

CATASAUQUA, PENNSYLVANIA

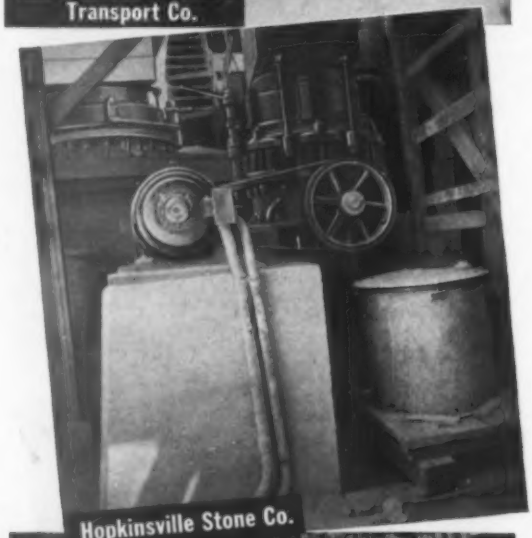
Chicago: 1144 Marquette Bldg.
San Francisco: 320-321 Chancery Bldg.

C-62

FULLER-KINYON, FLUXO, AND AIRVEYOR CONVEYING SYSTEMS · · · · ROTARY FEEDERS AND DISCHARGE GATES
ROTARY AIR COMPRESSORS AND VACUUM PUMPS · · · · AIR-QUENCHING COOLERS · · · · BIN SIGNALS

Kelley Island Lime and Transport Co.

Add a SHORT HEAD CONE for producing those minus ½ inch sizes



Hopkinsville Stone Co.

New York Trap Rock Co.

To meet the need for increased quantities of finely crushed materials, many producers of crushed stone, gravel and slag have added Symons Short Head Cones to supplement existing crushing equipment. A large number of these Short Heads follow Symons Standard Cones and make the extremely small sizes for which there is a constantly growing trend in practically all fields where crushed materials are required. With a Short Head, it is possible to make just the sizes for which there is an immediate demand. Unsalable sizes need not be produced in order to meet market requirements. Costly re-handling and stock piling are eliminated.

In addition to increasing capacity, Short Heads also lower the cost of making these finer crushed materials. If you have a demand for minus ½ inch sizes, you can make them in greater capacity and more profitably with a Symons Short Head Cone. That most of the larger producers use Cones for their fine crushing operations is proof of the superiority of this Crusher for this service.

NORDBERG MFG. CO.

MILWAUKEE, WIS.

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60 East 42nd Street

LONDON
Bush House

LOS ANGELES
Subway Terminal Bldg.

TORONTO
Concourse Bldg.

SYMONS CONE CRUSHERS

Priorities Practices More Simplified

EARLY IN THE DAYS of priorities a prominent member of the O.P.M. told an interested group that priorities reminded him of his own experience in a manufacturing concern where temporarily demand exceeded production. It was decided to solve the problem by putting red tags on the most important orders. Just like an editor marks a lot of important news items "Must." Well, it wasn't long before everything in the shop had red "must" tags—and the manufacturer was right back where he started from. Something like that has happened to the priorities division of the O.P.M., as the member had predicted.

The new S.P.A.B. is changing the setup, and while in the preliminary stages, and possibly all the way through, the new rules and regulations may bear harder on many producers and manufacturers, these same producers and manufacturers may be sure that in so far as humanly possible, *first things first* will be the rule. And they may be assured that Donald M. Nelson, who is running the show, is probably just about as capable of running it as any human being could be.

Under the new rules any mine or quarry, and that includes sand and gravel pits or any other excavation designed to produce a useful mineral product, or plant converting minerals into useful products such as cement, lime, etc., is entitled to an A-8 preference rating for repair parts and supplies, or even an A-1-a rating for an emergency repair part or supply. Once obtained these ratings can be applied to orders for all such repair parts and supplies.

To get permission to use this preference A-8 rating the producer must apply to his State Emergency Coördinator for Mines, an official designated by the Governor of each State, for him to certify to Dr. Wilbur A. Nelson, Priorities Coördinator for Mines, O.P.M., Washington, D. C., that the producer does actually operate a mine as defined in Preference Rating Order P-56. Dr. Nelson's office will then issue a serial number to the producer, or mine operating company, which should be stamped on all orders for repair parts and supplies, with a note to the effect that the order carries an A-8 preference rating. The serial numbers are being issued one state at a time, and the producer must have a serial number for each state in which he operates.

It has been said by an official of O.P.M. that a repair part may be a complete new machine such as a pump, screen, crusher, motor, etc., where it is necessary to replace one damaged or worn out, but not such a machine if it is designed to increase plant capacity. Supplies cover all ordinary commodities necessary to operation such as gasoline, oil, belting, etc. They may be ordered in advance of actual need so long as only necessary inventory is carried against anticipated usual breakdowns under normal operating conditions.

Rock products operators who cannot qualify their enterprises as mines, such as ready-mixed concrete, concrete products, etc., are entitled to an A-10 preference rating for repair parts and supplies under an amendment to order P-22. Retail establishments are excluded—you must be a "producer." Application for this A-10 preference rating is made direct to the O.P.M.

Both A-8 and A-10 ratings denote a defense need and require the supplier of the repair part or supplies to comply, and permits the supplier to obtain materials and equipment to comply, by use of the same preference ratings. However, rock products operators should not use these preference ratings where it is possible to obtain what they need without them, for obviously to use them unnecessarily will merely help clog the works, and possibly lead to new rules and regulations.

Producers who are serving defense construction projects, which include much highway maintenance and new construction, are entitled to preference ratings under revised O.P.M. Order No. P-19. In this case the builder is issued a serial number and he can extend this preference rating (which may be better than A-8 or A-10) given to him for the specific job to the supplier of construction materials. "Material" is defined as "any commodity, equipment, accessories, parts, assemblies or products of any kind" which "will enter directly or indirectly, at any stage, into the construction of the defense project"; this obviously covers equipment and accessories needed by the construction materials supplier as well as the builder.

There are many rules and regulations to be complied with and much filling out of forms (PD-63 in this case), but it is expected that these will be acted upon much more expeditiously than in the past.

Nathan C. Rockwood

NEWS AND COMMENT

New Construction in 1942 Expected to Decline Only One-Fourth from 1941 Peak

UNDER THE PRESSURE of priorities and allocations which will divert the use of materials from nondefense to defense purposes, new construction in the United States and outlying possessions probably will recede in 1942 to approximately $8,500,000,000. This estimate is based upon a comparison of civilian and military needs for next year made by economists of the Bureau of Research and Statistics, Office of Production Management.

The figure represents a decline of about one-fourth from the estimated $11,200,000,000 in construction activity expected for the current year. The previous peak as measured by dollar value occurred in 1927, when the construction value rose to $10,948,000,000. O.P.M. economists point out that the probable construction activity for 1942 would be greater than the 1940 figure of $6,850,000,000.

Defense To Take 75 Percent in 1942

The estimate for 1941 indicates that defense construction will account for approximately 44 percent of all building, whereas in 1942 the proportion of defense construction will rise to more than 75 percent. Defense work next year is expected to employ an average of 1,300,000 men throughout the year, with 1,500,000 or more at peak periods. The average is about 30 percent greater than the estimated average for 1941.

If the number of residential units constructed in 1942 drops by 200,000 next year, the decline in employment is estimated roughly at around 120,000 man-years, and, since the type of building affected probably will be the more expensive home construction, a tentative estimate of the amount by which dollar value will decline is placed between $800,000,000 and $1,000,000,000.

Industrial expansion for nondefense purposes also is expected to drop sharply. The possible decline is from $500,000,000 in 1941 to $100,000,000 in 1942. Public utility construction is expected to fall abruptly as maximum use is to be made of present facilities in many instances.

Farm Construction May Rise

Farm construction probably will not decline but may actually rise as it did in 1918, the survey indicates. Construction of highways may drop. Other public and miscellaneous construction is expected to decline, so that the volume of nondefense construction in 1942 may not exceed $2,000,000,000.

This suggests an average employment on private construction of about 400,000. If about 400,000 men are working on maintenance, repair, and remodeling, the total employed in nondefense construction would add up to approximately 800,000, a drop of more than half.

Shifts in Employment

Average employment on construction work, including maintenance, repair and remodeling for both defense and nondefense, would be about 2,100,000 in 1942 according to these estimates. This would represent a decline of 22 percent from the average employment on construction of 2,700,000 estimated for 1941.

This study indicates that construction workers in many communities will be very hard hit, although those in other localities will benefit by the shift in activity. Building workers, it is pointed out, as a rule are more mobile than industrial or commercial employees. It is also pointed out that construction employment is greater than at any time since 1930, and that a decline in 1942 would be from a peak. It is also noted that there will be a large and growing demand for workers in shipbuilding in 1942, so that the employment opportunities for construction workers will be better than at any time since 1930. The O.P.M. study estimates that private construction will continue at a high level for the remainder of 1941.

Not Exclusively Construction

IN ANY DISCUSSION of the effect of curtailment of new construction on the rock products industry we must bear in mind that construction is only one of several fields served. Limestone is quarried and crushed for industries manufacturing critical materials, such as steel, chlorine, pulp and paper, etc., and agriculture can not do without it. Similarly there are many market outlets for sand and silica other than construction. To these one could add a long list of industries requiring rock products which are vital to the defense effort.

ESTIMATED NEW CONSTRUCTION
Continental United States, Calendar Years 1940 and 1941

	1940 (millions)	1941 estimated (millions)	Percentage increase
Total new construction	$6,850	$11,000	60.6
Total private	4,183	5,000	19.5
Residential building (nonfarm)	2,085	2,500	19.9
Nonresidential building:			
Industrial	445	500	12.4
All other	540	550	1.9
Farm (all types)	468	525	12.2
Public utility	645	925	43.4
Total public	2,667	6,000	125.0
Highway	900	1,000	11.1
Residential building:			
Defense	7	375	5,257.1
Other public housing	200	175	—12.5
Nonresidential building:			
Industrial	110	1,700	1,445.5
All other	375	350	—6.7
Military and naval	475	1,750	268.4
All other public	600	650	8.3

Source: Bureau of Research and Statistics of O.P.M. and of Department of Commerce.

No Magnesite Shortage?

TO THE EDITOR:

I am very interested in the article appearing in your October, 1941, issue of ROCK PRODUCTS, on page 31, headed, No Magnesite Shortage,* particularly with reference to dead burned magnesite.

You call attention to a domestic production in 1940 of 140,688 tons, pointing out how much greater this was than preceding years, etc. While there is some dead burned magnesite used in other than the steel industry, the vast majority of it is used in basic open hearth furnaces producing steel, either as the dead burned grain magnesite or in the form of brick used in these furnaces. While there is some steel produced, such as acid open hearth, where no magnesite is used, the percentage is so small that roughly speaking the consumption of magnesite goes up or down almost exactly as the percentage of steel mill production.

In the five-year period from the beginning of 1934 through 1938, 1938 being the last year that I have immediately available on which I have complete records, it showed we produced 189,316,000 tons of steel. In that same period we produced and imported 497,525 tons of dead burned magnesite. By taking the five year period, the differences between inventories for the beginning and ending of the period become almost negligible.

By dividing the tonnage of magnesite by the tonnage of steel produced we arrive at a figure of approximately 5¼ lb. of dead burned magnesite consumed per ton of steel produced. The approximate rate of operation of the steel plants to date indicates about 85,000,000 tons of steel production for 1941, which would indicate a consumption of dead burned magnesite for 1941 of approximately 223,125 tons.

While the writer is not thoroughly posted on the exact point of origin of all imports, we believe that the bulk of the imports coming in in 1940 came from Japan, Manchuria, and that these sources are now closed. From this it would indicate that a production of 140,000 tons would still leave us around 80,000 or 85,000 tons short, this 80,000 or 85,000 tons being reduced by that amount which has already been imported this year.

These figures would indicate that there is a magnesite shortage in the not distant future, unless there is sufficient new production scheduled to go in in the near future which would offset it. We have heard that there is considerable new production to go in at Chewelah, Washington, but the increased capacity is not known.

According to your figures of 22 percent imported in 1940, this would indicate imports of approximately 40,000 tons. If we assume that these imports are still available, it would still indicate that a very material increase in our domestic production of 140,000 tons would be necessary to avoid a shortage.

Yours very truly,
C. M. DAY,
Vice-President,
Valley Dolomite Corporation.

* EDITOR'S NOTE: This information was taken from a Bureau of Mines report.

Effect on Our Industry Not Serious

AT A RECENT meeting of the New York Building Congress, Sullivan W. Jones, chief of the housing priorities branch of the O.P.M., said that S.P.A.B. meant to enforce its order to halt all new construction not essential to defense. According to the *Wall Street Journal*, he said further restrictions on the flow of materials would be announced within the next few days in order to expedite defense housing. These will require all buyers of materials to certify that the materials are to be used for defense.

Without these customers' certificates neither the retailer nor the wholesaler of building supplies will be able to replenish stocks of "critical" materials. The certificates also will be needed by manufacturers to obtain new supplies of raw materials.

Apparently builders weren't the only ones confused by the S.P.A.B.'s announcement, especially those parts dealing with "non-essential construction" and "appreciable amounts of critical metals." Mr. Jones told his listeners that he didn't know what they meant and neither did anyone else in Washington.

Discussing the $6,000 limit on new defense houses, Mr. Jones asserted that there has been considerable pressure to make it higher but added that no change is likely. He said that a livable house can be built anywhere in our country for less than $6,000.

Mr. Jones took issue with the statement of Charles F. Palmer, housing coordinator, that private enterprise will build 425,000 of the 525,000 housing units needed by next July. He said that he did not think the amount of housing put up by private enterprise would reach the 425,000 figure.

It seems incredible, he added, that private enterprise would build houses "in the middle of a prairie" or in "a ghost town of the future." He added that it wasn't likely that workers would buy such houses, either.

Construction volume next year, Mr. Jones predicted, will be between eight billion dollars and nine billion dollars, compared with more than eleven billion dollars as of this year. This will result in the displacement of around 500,000 workers, he said. Many of these workers probably can go into the shipbuilding industry, he added.

ADVENTURES OF SUPER DAN, THE SUPERMAN

DIDN'T I WRITE YOU A LETTER THAT YOU WERE FIRED?
YEH, THATS WHAT IT SAID ON THE INSIDE, BUT ON THE OUTSIDE IT SAID "RETURN IN FIVE DAYS"

Hints and Helps

★ FOR SUPERINTENDENTS ★

Rock Ladders Rubber Lined

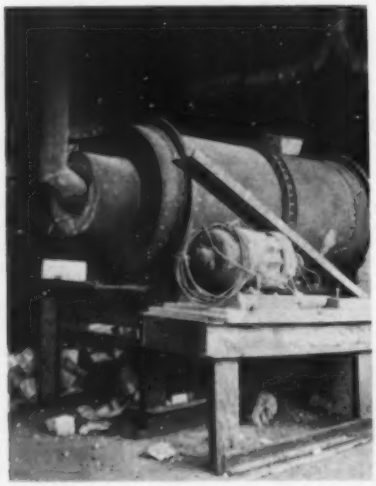
THIS ROCK LADDER, which has been illustrated in the columns of ROCK PRODUCTS before in a more general view of the Friant dam aggregates plant, is in its second year of service.

Ladder used in stockpiling crushed stone is lined with strips of belting

Rock ladders are becoming more common each year as their worth in reducing rock breakage is now well recognized. Where a ladder is used some thought can be spent on taking care of the ladder itself for the cascading of great tonnages of coarse gravel will soon wear out the device. Rubber linings solve this problem.

Laboratory Kiln

YOSEMITE PORTLAND CEMENT CO., Merced, Calif., prepares low alkali cements for the Central Valley project by re-heating the clinker to approximately kiln temperatures and holding that heat for about 12 minutes. By this simple method specifications are met. However, before these facts could be determined a large amount of research and laboratory work was carried out under the direction of Mr. H. McC. Larmour, chief chemist. One of the pieces of equipment used was the laboratory kiln shown in the illustration. The kiln is about 8 ft. long and 30 in. in diameter. Gas is used for fuel. A great part of the experimental work was done in this kiln in an effort to



Laboratory kiln to test method of conditioning clinker to remove alkali

find a good method of controlling the alkali content of the finished cement.

Coil to Preheat Oil For Kiln Burner

AT A WESTERN CEMENT PLANT oil is burned for fuel, but no costly device is used for preheating the oil. The master mechanic built a coil which is carried in the discharge end of the kiln in such a fashion that the coil can be moved forward or backwards so as to regulate the temperature.

The oil is normally heated to about 140 deg. F. by this device. A 1⅛-in. diameter pipe is used for the coil which is about 12-in. in diameter and 30-in. long. The coil is connected to oil pumps and burner by rubber tubing. Several extra coils are kept on hand. The device has been in use for some time and is working satisfactorily.

Unusual Crane

UNITED CONCRETE PIPE CO., Los Angeles, Calif., is using the Lima type 1001 crane, shown in the illustration,

Crane with long boom to elevate concrete for construction of tower

on a Southern Pacific Railroad relocation job near Redding, Calif. It is equipped with a 140-ft. boom, 20-ft. hammerhead, and a 1-cu. yd. concrete bucket. The concrete and bucket weigh about 5000 lb.

Left: Coil to preheat oil. Right: Rubber tubing and pipe connections to oil heating coil installed at discharge end of kiln

Testing Laboratory

THE LOADING BELT at the Fair Oaks plant of Pacific Coast Aggregates, Inc., passes under the storage bins so that any blend of aggregates and/or crushed stone can be made. The belt elevates and conveys the material to a vibrating screen where it is given a final rinse with clear water.

For convenience of the engineer responsible for the quality of the materials loaded, a small laboratory has been established adjacent to the rinsing screen. Here the testing engineer can take his samples and make what test he deems necessary without delays that would be necessary if the laboratory was at some more distant point.

In the illustration showing the laboratory, note how the supporting columns of the belt conveyor system are protected by metal guard rails so that trucks working in the yard will not damage the conveyor system.

Materials are tested in laboratory adjacent to rinsing screen. Note guard rails around conveyor towers

Boulder Remover

AT A LARGE WESTERN sand and gravel operation the pit material is loaded to a field belt conveyor system that delivers the material to the washing plant. In the pit are some boulders that are too large to economically handle in the crushing plant so they are 'ditched" near place of origin.

The drag line loads to a field hopper which in turn feeds the belt conveyor. An operator, who has a platform near the field hopper, looks after the flow of material going to the belt. If a large boulder is put in the hopper, the operator allows it to pass onto the belt.

Air hoist operated scraper removes boulder from conveyor

Farther down the belt is a specially designed scraper that is raised or lowered by means of an air hoist. The operator can control this air hoist from his platform. The large boulder is allowed to proceed via the belt conveyor to the point where the scraper is installed to sweep it off the belt for discard. The angle iron grizzley, shown in the illustration, is merely to protect the steel structure of the belt conveyor itself.

Saving Concrete Spillage From Pipe Machine

JOURDAN CONCRETE PIPE CO.'s plant at Fresno, Calif., makes drainage tile on two Tuerk-Mackenzie machines.

Conveyor, to the right, returns concrete spillage at pipe machine back to the mixer

With this type of machine, the concrete is tamped in the form by vertical tamping bars. For large tile two tamper rods are used, one on each side of the reinforcing cage.

Spillage of concrete in such a machine can be allowed to accumulate around the operator's feet and eventually be wasted, but at this plant a 6-in., inclined belt conveyor carries the small amount of spill back to the mixer. The illustration shows the concrete aggregate going up a chain-drag conveyor to the tamping machine. The inclined belt at right carries the spill back to its source. The conveyor belt is driven from the same motor as the feeder drag belt.

There are undoubtedly other similar applications for this method of saving concrete otherwise wasted.

Tripper Extension for Conveyor Belt

AT THE FAIR OAKS PLANT of the Pacific Coast Aggregates, Inc., a large stock pile of pit run (minus 2½-in.) must be kept on hand at all times as the material is excavated from the Feather River which, during winter months, experiences such high water that work in the pit must stop.

Extension on tripper discharge lip keeps material from dropping on the conveyor runways

Any part, or all, of the material from the primary scalper can be sent to storage by a belt conveyor that elevates the material to the top of the stockpile where a Link-Belt tripper unloads the aggregate.

In an effort to keep the runways paralleling the unloading belt free and open an extension had to be put on the discharge lip of the tripper, as shown in the illustration. The toe boards of the runway were also reinforced with sheets of old iron plate.

This arrangement is of decided advantage as a safety measure. It also largely eliminates the need for frequent clean-ups of the runways.

World's Largest Quarry

Michigan Limestone & Chemical Co. operates quarry with 9½ miles of working face and 35 miles of track

MANY in the industry have perhaps wondered what quarry operation was the largest in the world. On these two pages are shown typical views of the Michigan Limestone & Chemical Co. plant and quarry at Calcite, Mich., which is unquestionably the largest in the world. This important subsidiary of the United States Steel Corporation produces a major share of the 17 million tons of flux stone used annually by the steel company in its steel manufacturing operations.

Change to Diesel-Electric

Stone is hauled from the quarry in drop-door side dump cars, each equipped with air-operated dumping mechanism. Many of the cars have a capacity of 35 cu. yd., or 42 gross tons of stone, and the company has one car of 50 cu. yd. capacity with 20 on order. Motive power includes six Diesel-electric locomotives, as well as a number of steam locomotives which will be taken out of service as Diesel-electric engines now on order are received.

At the plant, gyratory crushers reduce the stone to minus 9-in. pieces. The throughs go to 54-in. belt conveyors, 1500-ft. centers, starting 10 ft. below lake level and emerge above ground beyond the drive house, containing two 250-hp. electric motors, from which they extend to the top of the screen house, 145 ft. above the lake.

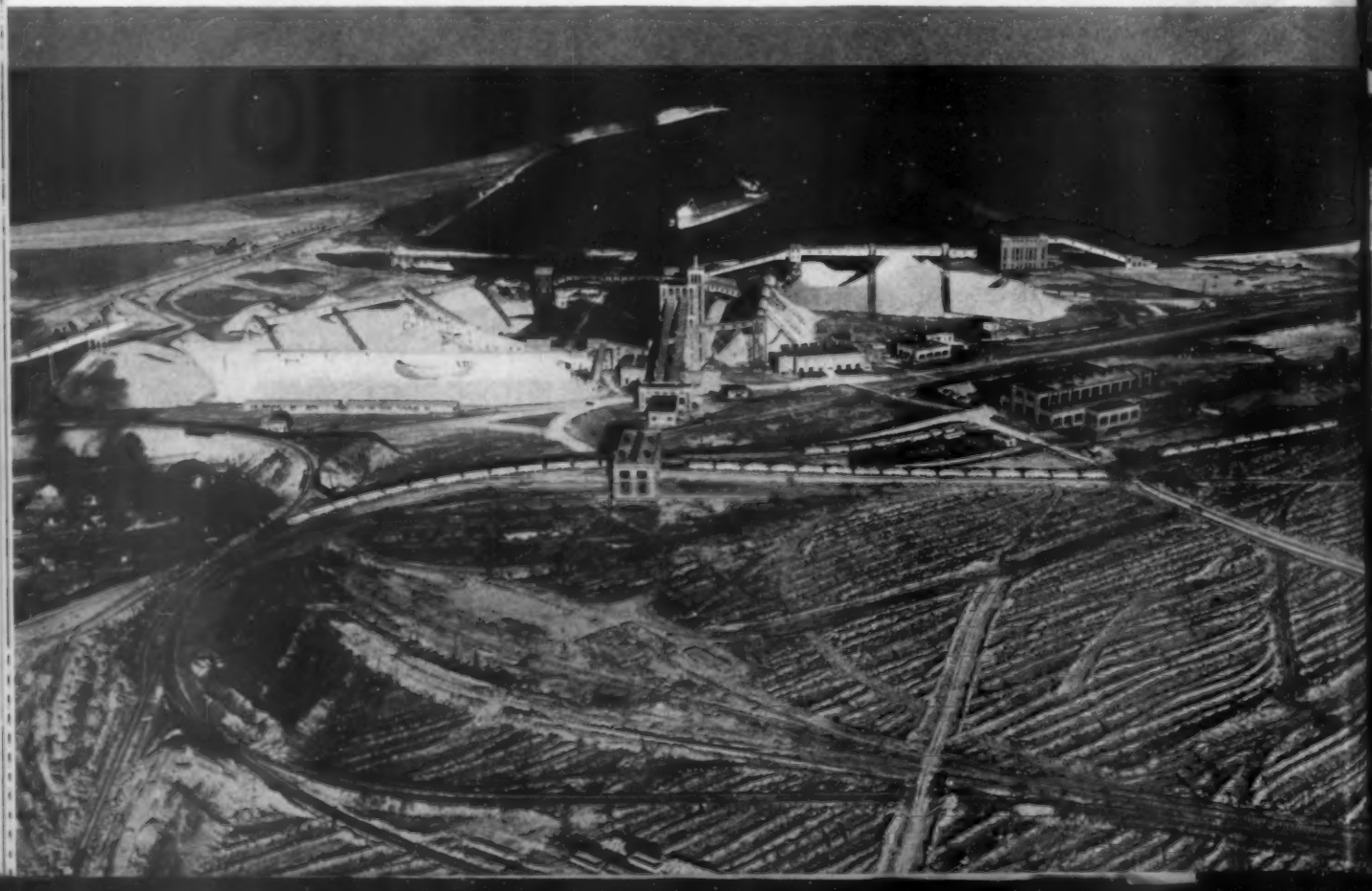
Screening Plant

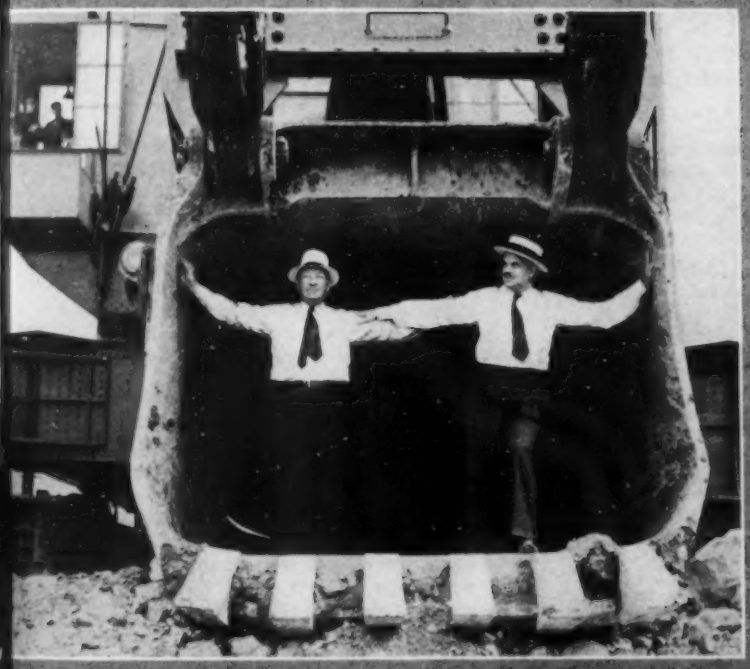
The screen house contains two secondary crushers, and a series of vibratory screens over which the stone is sized and washed. Each screen feeds a belt conveyor that carries sized material to storage. In normal operations not more than nine different sizes are screened at any one time, but other sizes may be produced if the demand warrants.

As shown in the air view illustration, storage piles are located on both sides of the screen house. Just beyond and slightly to the left, is the loading slip, in which vessels are moored for loading. The storage pile immediately to the right of the screen house is for open hearth stone, that in the right background for blast furnace flux, and those at the left for finer stone, used by cement plants, chemical companies, etc. Stone is released from the various points in the pile to an underground conveyor which connects with a conveyor serving the loading dock.

The company's electric power plant, supplying all power for crushing, screening, loading and pumping, as well as for quarrying operations, is shown at the right on the harbor's edge. Coal for the boilers is delivered by lake boat at the adjacent dock and carried by belt conveyor into the plant. Photographs and information for this story have been released through the courtesy of *U. S. Steel News*.

Airplane view of world's largest quarry operated by Michigan Limestone & Chemical Co., Calcite, Mich.
Copyright Abrams Aerial Survey Corp., Lansing, Mich.





To the left, from top to bottom: Electric shovel of 20-cu. yd. capacity loading cars; Joseph Penglase, vice-president, Michigan Limestone & Chemical Co., and R. B. Henley, formerly auditor and secretary and now auditor of the Oliver Iron Mining Co.; one of the conveyors carrying stone to the screen house. Right, top, screen house, and below, Diesel-electric locomotive hauling train of limestone to the plant

NEWS ABOUT PEOPLE

R. A. HUMMEL, formerly executive vice-president of the Lone Star Cement Corp., New York, N. Y., has been elected president and general manager to succeed C. L. Hogan, who passed away recently.

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LATHAM GRAY, formerly associated with the Fernald-Gray Quarries, New Port Richey, Fla., is now superintendent of construction for the Whiterock Quarries, Inc., Bellefonte, Penn.

•

BURTON A. FORD, sales manager of The Valve Bag Co., Baltimore, Md., will also operate as Manager of the Southeastern division for St. Regis Paper Co. and the Taggart Corp., and will serve the lime companies in Ohio and Pennsylvania as well as in the Southeastern division. Mr. Ford was formerly general manager of the National Lime Association.

•

FELIX WILLIAMS, manager of the local plant of the Monsanto Chemical Co., Columbia, Tenn., has been promoted to the position of manager of the entire phosphate department which places him in charge of plants at Anniston, Ala.; St. Louis, Mo.; Detroit, Mich., and elsewhere. A. Beauregard has been appointed manager of the local plant to succeed Mr. Williams.

•

H. X. ESCHENBRENNER, president of the Universal Concrete Pipe Co., Columbus, Ohio, has been elected president of the Kiwanis Club.

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ROBERT E. ANDERSON, director of advertising, National Gypsum Co., Buffalo, N. Y., will represent his company in the Association of National Advertisers, Inc., to which the National Gypsum Company has been elected a member.

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A. F. MILLER is consulting engineer and J. L. MCCONNEL is structural engineer in connection with the improvements being made at the Des Moines, Iowa plant of the Marquette Cement Manufacturing Co.

W. B. MARSHALL, who has been assistant sales manager of the conveying and engineering products division of the Chain Belt Co., Milwaukee, Wis., has been made sales manager of that division. Mr. Marshall has been with the company since 1920. Besides being assistant sales manager, he has been in charge of the development and sales of sanitation equipment. He graduated from Sheffield Scientific School of Yale University in 1921.

•

LOUIS B. NEUMILLER, formerly vice-president of the Caterpillar Tractor Co., Peoria, Ill., has been elected president of the company. Mr. Neumiller is a native of Peoria and was educated in his city's schools. The story of his rapid ascent in the company ranks is a shining example of the American way of life and the opportunities it offers one with ability, ambition and courage. He began his career with the Caterpillar Tractor Co. as a stenographer and blueprint clerk

Louis B. Neumiller

in the engineering department. In quick succession Mr. Neumiller became drafting room supervisor, parts manager, general service manager, sales manager, director of industrial relations, vice president, and now president.

W. F. KURFESS, vice-president of Joseph T. Ryerson & Son, Inc., has been ordered to active duty in the U. S. Navy, to take charge of the Steel Division of the Bureau of Ships, Navy Department. Mr. Kurfess attended the U. S. Naval Academy at Annapolis and graduated from Purdue University in 1912.

•

TOM M. PRICE, a designer of early aggregate plants, who has been for the last three years manager of construction on New York City's Delaware River Aqueduct for J. F. Shea Co. and Henry J. Kaiser Co., has been transferred to Cocoli, Canal Zone, as vice-president for Panama Constructors, Inc. He will be in charge of excavation for the third set of Panama Canal locks on the Pacific side of the isthmus. The project includes excavation of about 30,000,000 cu. yd. at a contract price of $22,500,000.

•

WALTER SEILER, superintendent of the Champion Gravel Co., Iron Mountain, Mich., and former Kingsford village manager, has declined appointment as Dickinson county road commission engineer. Mr. Seiler was the unanimous choice of the board of road commissioners for appointment to succeed James A. Ciulo, who resigned to enter private employment with a firm of consulting engineers.

•

GORDON LEFEBVRE, formerly manager of the Diesel Engine Division of the American Locomotive Company, Auburn, N. Y., has been elected vice-president and general manager of the Cooper-Bessemer Corp., one of this country's oldest and largest heavy machinery builders, to fill a vacancy created by the untimely death of Charles B. Jahnke. B. B. Williams retains the positions of president and chairman of the board of directors. Mr. LeFebvre and L. F. Williams were also elected directors of the corporation.

•

E. C. SMITH, JR., Charleston, W. Va., engineer and national director of the Public Work Reserve, has been chosen president and general manager of the Standard Brick and Supply Co. and the West Virginia Sand & Gravel Co., succeeding Burr H. Simpson, who resigned from the position a few weeks before he died.

•

J. R. BOYD, administrative director of the National Crushed Stone Association, has been named treasurer of the American Trade Association Executives.

General view of Edward Balf Company's new sand and gravel plant. In the foreground is the ramp leading to truck receiving hoppers, below one of which is the crusher. A conveyor belt leads to a vibrating screen directly over sand drag, center, and three belt conveyors radiate to bins for the different products

By BROR NORDBERG

An Efficient Semi-Portable

Edward Balf Co. builds semi-portable sand and gravel plant which may be moved to new location as deposit is depleted

AFTER MANY YEARS in the production of crushed trap rock and ready-mixed concrete, the Edward Balf Co., Hartford, Conn., built a new sand and gravel plant in 1940. Much of the sand production and some of the gravel, were desired for ready-mixed concrete, and a good part of the sand must satisfy federal specifications.

It was desired to have a plant, that while not portable, could be moved to new locations in the Hartford area, as deposits of sand and gravel are depleted to the point of uneconomical hauling range to the plant. It was therefore built of all-steel, with bolted sectional belt conveyors for intra-plant transportation. Characteristics of the deposit now under excavation were taken into consideration in provisions made to balance production and to reduce handling.

Twenty-five acres of sand and gravel property at Farmington, Conn., were purchased, the deposit being 70 percent sand and a relatively small percentage of gravel over 2-in., the maximum size product of the plant. Fines in the sand are sufficient in quantity to meet sand specifications that require 10 to 25 percent through 50-mesh and 1½ to 7 percent minus the 100, and are obtained by careful manipulation of a simple sand drag that functions as a classifier. Crush-

Close-up of double-deck sizing and washing screen with sand drag below and belt conveyors radiating to the different bins

Above: Truck dumping into one of the hoppers having a chain-flight feeder to feed the conveyor. Below: Impact crusher, to the right of truck hopper, used to crush tailings. Crusher throughs are returned to belt conveyor

ing of the oversize is done only when wanted or when the demand is for small sizes of gravel.

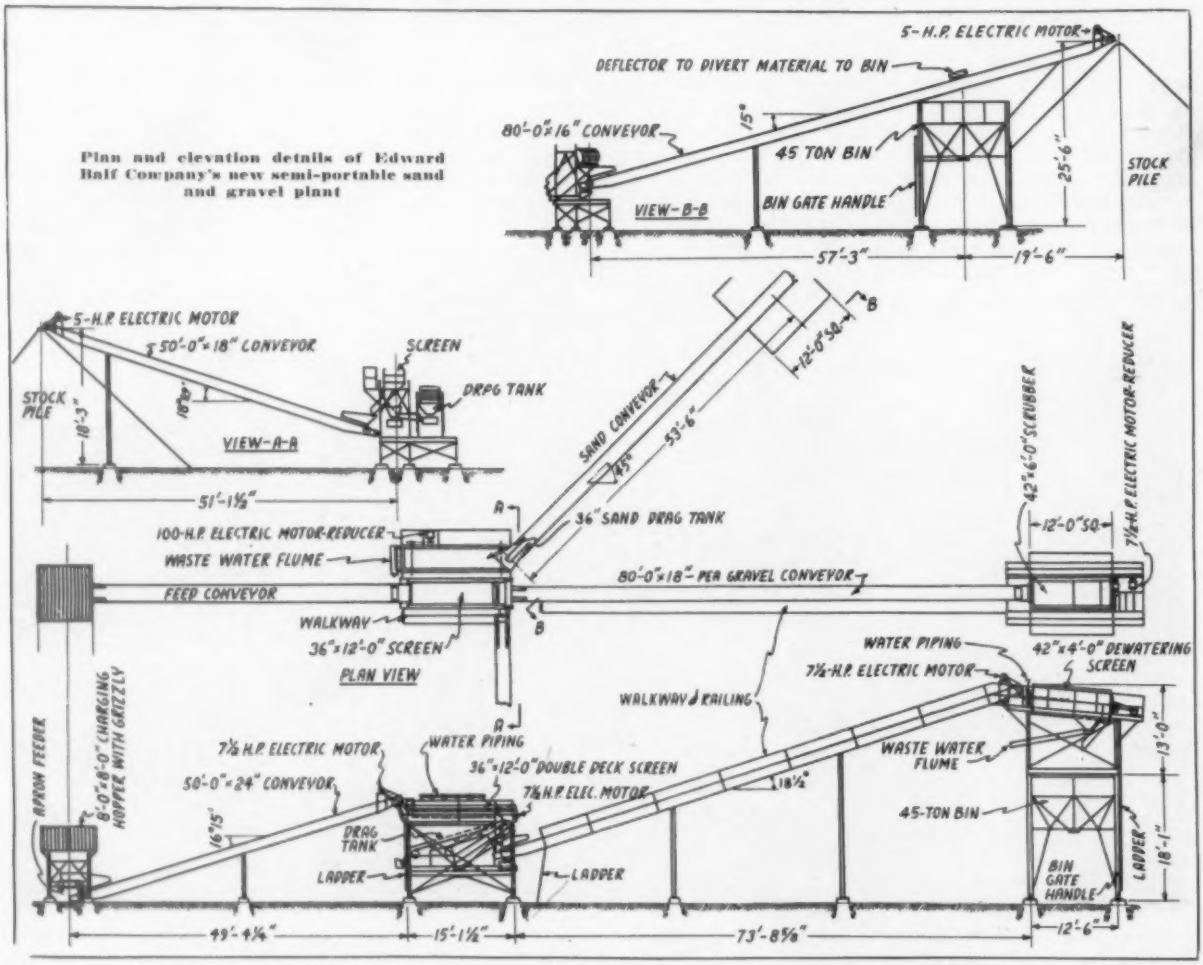
The plant was designed by the Iowa Manufacturing Co., which furnished all the conveyors and bins and manufactured all the other production equipment with the exception of the vibrating screens. It consists of two truck receiving hoppers, with a crusher below one of them, a belt conveyor feeding to a vibrating screen directly over the sand drag and belt conveyors radiating out from this screen to steel bins, from which the several products are loaded out into trucks. Production is about 80-tons per hour of sand and gravel combined.

Sand Drag Recovers Fines

Development of the pit is in the form of parallel rows. A 1⅛-cu. yd. Marion gas-electric shovel fills end-dump trucks of 5-cu. yd. capacity which have only a short hauling distance to the plant. An Iowa chain-flight feeder pays the pit run material out of the 10-cu. yd. hopper on to a 24-in. belt conveyor, 48-ft. centers, which discharges over a 3- x 12-

(Continued on page 36)

Plan and elevation details of Edward Ralf Company's new semi-portable sand and gravel plant



Proportioning Raw Materials For Special Cements

Volumetric method of proportioning raw materials is being used successfully to make the five A. S. T. M. Types of cement

By CHARLES T. RABER*

CHEMIST'S CORNER

Problems and practices of the chemists in the industry are discussed on these pages. Contributions and comments are invited.

WITH THE general acceptance of the five types of cement as recommended and adopted by Committee C-1 of the American Society of Testing Materials, the problems of the average chief chemist become more cumbersome and require closer control to meet these exacting specifications.

At the plant of Glens Falls Portland Cement Co., Glens Falls, N. Y., we have no weighing devices for the various raw materials, and therefore are compelled to use volume proportioning to introduce the required raw materials to our regular rock which is deficient in silica and iron, to meet the specifications of Type II, IV and V.

Rock in the quarry consists of four strata with the following analyses:

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Loss
A—Low lime rock	20.60	6.76	1.84	35.24	2.00	31.75
B—Low O.K. rock	16.90	5.57	1.63	38.37	2.15	33.20
C—High O.K. rock	13.90	5.41	1.39	41.15	2.07	35.25
D—Limestone rock	8.78	3.85	1.00	46.30	2.00	38.07

The slurry made from this rock and held to our normal holding point will produce the following during our normal run of "Iron Clad":

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Loss
Analysis of Slurry	13.23	4.28	1.58	41.76	1.90	35.03
Analysis of Clinker	20.37	7.12	2.55	64.19	2.95	0.32
Analysis of Cement	20.07	6.97	2.53	63.56	2.79	0.76

You will observe from the foregoing tables, that we must add a certain quantity of admix containing chiefly silica and iron to bring our slurry to the required analysis to produce the desired results.

For the silica we use a sand which has the following approximate analysis:

SiO_2	Fe_2O_3	Al_2O_3
95.00	1.12	2.38

Our chief source of iron has the following analysis:

SiO_2	Fe_2O_3	Al_2O_3
0.50	95.0-98.0	1.15-1.90

Since we have no scales with which to introduce this sand and iron into our mix, we make an admix of the sand and iron ore, and place it in a bin in our stone storage. The proportion of sand to iron was predetermined, and was found to be about four parts of sand to one of iron. We therefore place about 3000 lb. of sand on a 2-ton truck and add about 750 lb. of iron, and then transport it by means of a belt conveyor to the bin in our stone storage. In our stone storage we have a 3-cu. yd. crane that feeds the stone into a hopper which in turn feeds the stone to our ball mills.

Ordinarily we use 16 to 18 buckets of our quarry rock to one bucket of the admix. In order to distribute the admix over the stone as much as possible, we instruct the cranemen to take only a quarter bucket of the admix to each four or five buckets of stone.

To illustrate how uniform our slurry is, let me give you a typical week of slurry and clinker analysis:

SLURRY	SiO_2	Fe_2O_3	Al_2O_3	CaO	Loss	Al_2O_3/Fe_2O_3
May 19	15.96	2.71	2.57	41.66	34.90	0.95
May 20	15.90	2.62	2.50	41.81	34.70	0.96
May 21	16.00	2.62	2.64	41.51	34.60	1.01
May 22	15.72	2.62	2.74	41.59	34.90	1.05
May 23	15.64	2.62	2.72	41.66	34.90	1.04
May 24	15.96	2.62	2.74	41.51	34.90	1.05
CLINKER						
May 19	22.30	4.43	5.21	63.95	0.22	1.17
May 20	22.12	4.26	5.48	64.03	0.23	1.23
May 21	22.00	4.26	5.54	63.73	0.25	1.30
May 22	22.00	4.22	5.46	63.73	0.22	1.29
May 23	21.96	4.30	5.50	63.80	0.25	1.28
May 24	21.76	4.43	5.17	64.19	0.28	1.17

For our control, we take the average of all the slurry made each day and run a complete analysis on it. After several days, and when we have the desired slurry in our kiln basin, we only determine the iron content of the slurry for control.

Complete analysis of the slurry is made each day until we have established a uniform Al_2O_3/Fe_2O_3 ratio, and then we only make a complete analysis every other day. We do, however, run a complete analysis on the clinker produced each day, to insure the proper ratio and to keep accurate control at all times on the various types we produce.

It appears that the cement chemist is called upon and must be more resourceful than ever in the history of the cement industry, and must be able to meet the exacting specifications of all types of portland cement which are required by the ever increasing demand.

* Superintendent and chemical engineer, Glens Falls Portland Cement Co., Glens Falls, N. Y.

Increasing Capacity of Kilns with Induced Draft Fans

By VICTOR J. AZBE

DURING the present industrial spurt most lime plants find themselves incapable of producing as much lime as desired. Many would like to enlarge their plants, but for this, much time and additional investment is necessary. If there was some method, not too costly, to give them an increase it would be welcome. The method which meets this condition is the application of fans for induced draft operation of kilns.

LIME FORUM

Mr. Azbe, consulting engineer, is a contributing and consulting editor of ROCK PRODUCTS. He will be glad to receive inquiries from his readers, and will answer these direct or through the columns of this Forum.

Induced draft, as a whole, was first started about 20 years ago, and its use gradually spread until today all of the more efficient vertical kiln plants are equipped with fans by means of which tremendous capacities are obtained from kilns comparatively small in size. The most outstanding case of them all is that of the recently built Canadian kilns which produce 80 tons of high calcium lime with a shaft area of only 57 sq. ft.

A lime kiln may be looked at as a stack, a clogged stack. The draft of this stack induces the air and burns the fuel, and the more fuel that is burned, the more lime may be made, but the clogging of the stack reduces the draft and the amount of fuel burned and, consequently, the capacity.

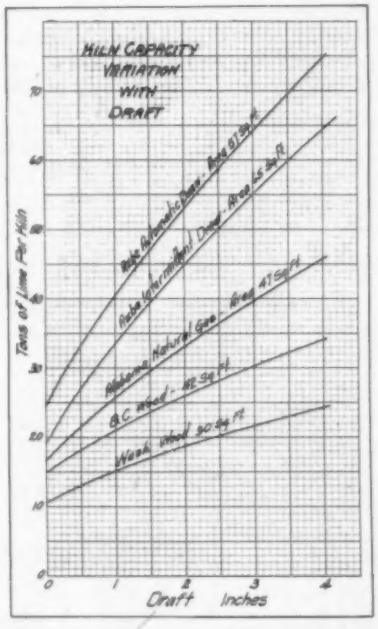
The smaller the stone and the more uniform it is in shape and, particularly, the higher the stack—that is the kiln—the less lime will be produced because stack blocking will be greater and draft interference more. A natural draft kiln will hardly produce reliably more than about 700 lb. of lime per sq. ft. of shaft area, while forced draft kilns have a record of four times this much, or 2800 lb. per sq. ft.

But to get such tremendous rates more than just high draft is needed, the kiln must be right in all respects and the stone size must be favorable in size and size variation. However, a limited capacity increase is possible with almost any kiln.

Doubling Capacity at Little Cost

In the past year many lime plants increased their capacity. One in Tennessee, without increasing the number of kilns, more than doubled the output. A plant in Alabama increased its capacity threefold by adding one kiln, changing an old one, and applying induced draft to all.

Experience in a Canadian plant was interesting: An old planing mill exhauster was found in the junk heap and was connected by means of old and discarded hydrator air separating system ducts, the only available, to two kilns. These kilns without induced draft produced normally 15 tons of lime, while with increased draft the output rose to 22 tons with 1¼ in. draft, and 27 tons per kiln with 2½ in. draft. It was all accomplished, without the purchase of anything, by the mere application of three days of labor on the part of a crew. The kilns were not even taken off the line to do the work; there was no interruption in service. However, the kilns had tops that could be readily closed off, and stone was readily available for night charging.



Graph showing how lime producing capacity varies with the draft

A paragraph in a recent letter obtained from a southern plant reads: "I promised to advise you of the operation of No. 2 kiln after getting the fan and gas adjusted for best operation. Apparently we have it fairly well adjusted with the use of ½ inch draft. This has increased capacity over 60 percent and according to our figures, we are getting around 28 tons per day from it."

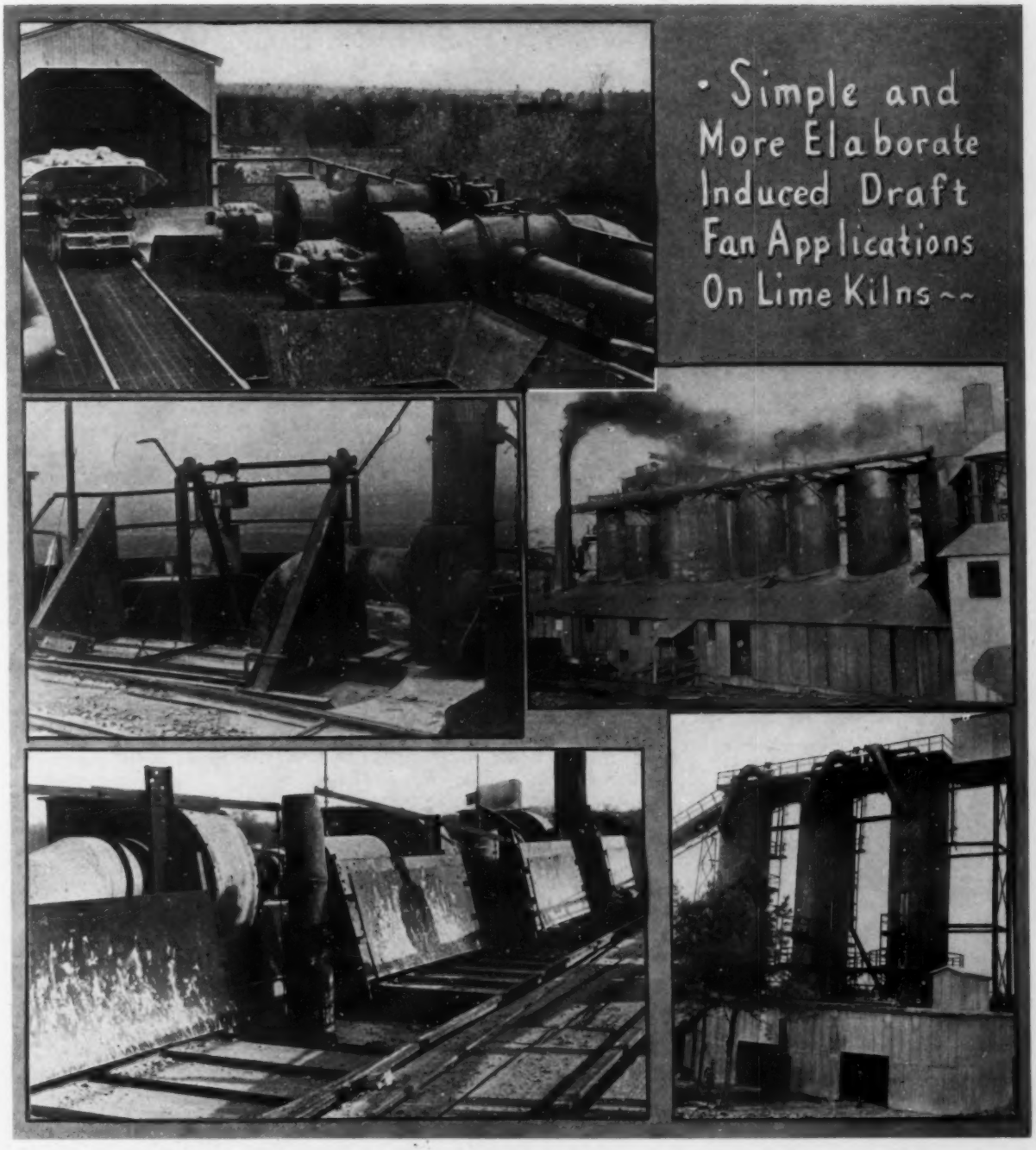
Considering that in this case it meant only obtaining and connecting the fan without even taking the kiln out of service, it made a very well worth while venture.

With more draft than ½ in. more lime would be obtained but some kilns can not take strong draft; they do not happen to be arranged for it, but almost any kiln will stand ½ in. and with this half inch, about 30 percent capacity increase may be expected with certainty, and possibly more.

How the capacity varies with draft is shown by the accompanying graph representing different size kilns located in different sections of the country. There are small kilns, and there are what one may call large kilns, but the difference is not great—the difference is more in the arrangement. Some can stand the full draft shown, and others can not, on account of this difference in arrangement. At best 5 to 6 in. of draft can be utilized successfully, but often not as much as one inch, unless the kilns or the firing system are changed.

Induced draft can increase capacity, but it also can give lots of trouble. With more lime made, the kiln top will heat faster and if stone is not charged, sometimes during the night the gases will be so hot that the fan will not be able to handle them. There may be secondary combustion, especially when natural gas or producer gas is used, and the kiln top and charging door will be warped and the fan damaged.

But all that can be avoided by a good lime plant superintendent. There are many induced draft plants



which have been in successful operation for many years, making a profit to their owners. The reason for this is that every additional ton of lime is costing less to produce, and now when all the lime can be sold a plant of good capacity has the advantage over one of low capacity, which must struggle along with high labor costs, and proportionally higher overhead.

When selecting fans for kilns, about 160 cu. ft. of free volume should be allowed per ton of lime. This would cover excess and leakage air to the amount of 100 percent of proper kiln volume, and this volume should be again doubled for 600 deg. F. temperature at which the fan may have to operate. When kilns are exceptionally leaky, more than 160 cu. ft. must be allowed, which also increases fan horse power. Under average conditions a No. 21 fan operating at 1400 r.p.m., connected to a 15 hp. motor, will produce about 60 tons of lime if kiln resistance is not unusually high due to extremely varied sizes of stone, or too small a stone. When size variation is too great, the stone should be screened and the two sizes burned separately. When stone is too small, say below 3-in. size, then the height of rock in the kiln should be reduced, as proper kiln height is definitely governed by the stone size and the proper height for 3-in. stone is only half of that for 6-in. stone. If the height is not so varied, then for the same capacity the small stone will require twice the draft, which may be so high as to be impracticable or too costly to produce.

Semi-Portable Plant

(Continued from page 32)

ft. Symons 2-deck horizontal screen.

This screen carries 1-in. sq. openings on the top deck, ¾- x 3/16-in. rectangular openings on the bottom, and has eight transverse spray pipes over the top deck. Wash water is regulated by hand valves on each pipe, according to the volume needed in the production of sand. The maximum is 1000 g.p.m. delivered by a Morris pump with an 8-in. suction and 6-in. discharge. By limiting the volume of water, the fines in the sand, as produced by a sand drag with 36-in. blades, can be increased. Sieve analyses are made of the sand every hour and water is varied according to these tests. The drag has an adjustable baffle, which can be raised or lowered to increase or decrease the fines, respectively. Hydraulic water is sometimes introduced underneath the rake classifier when the minus 16-mesh total fraction has a tendency to build up.

Sand comes off the rake drainboard on to a 16-in. belt conveyor, 80-ft. centers, that extends over and beyond a 45-ton steel bin. All sand must be stockpiled and drained, sometimes as much as two weeks, which involves some re-handling away from the plant and the loading of delivery trucks by a Haiss loader of 80-tons per hour capacity. Usually, the belt conveyor stream is diverted into the bin by a scraper on the belt above it, when trucks are available for stockpiling. Otherwise the sand drops into temporary storage just beyond the bin.

Two standard sizes of gravel are produced; 1-in. top size and 1- to 2-in. Specifications do not call for crushed gravel but plus 2-in. tailings are crushed down as they accumulate.

Gravel coming off between the decks of the horizontal vibrating screen is carried over an 18-in. belt conveyor, 80-ft. centers, to another steel bin of 45 tons capacity. It is first passed through a rotary scrubber 10-ft. long having a 6-ft. length of solid plate, with internal lifting paddles, followed by 4-ft. of perforated plate for washing. Washings waste out a flume and the gravel drops into the bin.

Similarly, an 18-in. belt conveyor, 48-ft. centers, carries the plus 1-in. gravel from the centrally-located vibrating screen to a 30-ton steel bin divided into two equal compartments. It first passes over a 3- x 4-ft. single-deck Niagara vibrating screen where a split is made of 1- to 2-in. gravel into one-half of the bin and tailings into the other.

Crushing is done only when needed. If the demand for 2-in. gravel approximates that for 1-in., the crusher is only started up to crush the tailings when that bin fills up. This requires emptying the bin only twice a day when working the pit in the present location, and the plus 2-in. has never exceeded 10 tons per hour.

Use Impact Type Crusher

Trucks carry the tailings, loaded out from the bin, up the same incline which trucks negotiate with bank run, but they dump into the second hopper which feeds by gravity into a No. 2 Kubit impact crusher. This machine is driven by a 50-hp. V-belt connected motor, consumes about 35-hp. and has a probable capacity of 50 tons per hour.

It discharges on to a short belt conveyor transferring to the main conveyor carrying bank run to the Symons screen. Thus, the crushed gravel is put through the same circuit as bank run either separately but more often without interruption of the main flow of materials. On occasion, 1- to 2-in. gravel is also crushed down to increase the output of 1-in. gravel. These surges, during crushing, increase the fines going to the sand classifier and usually necessitate increasing the volume of wash water. If the plus 2-in. fraction of the whole were greater, or will be in a future location, a belt conveyor will carry the tails directly to the crusher.

There are three electrical panel boards in the plant, conveniently located, and there is a separate General Electric magnetic switch with a push button to start and stop each separate piece of machinery.

Mario Nicolucci is in charge of production at the plant. Ernest R. Molt, secretary-treasurer, is general manager, and Harold Killian is general superintendent of all operations.

Union Asks Aid For Producers

A. F. of L. makes appeal to OPM for higher priority rating

THE COLUMBUS CONVENTION of the United Cement, Lime and Gypsum Workers International Union (A. F. of L.) instructed the General Office to make an appeal to the Office of Production Management in an effort to raise the priority rating of the industries under its jurisdiction; accordingly, the following letter and resolution were forwarded on September 30 to Edw. R. Stettinius, Director, Priority Division, Office of Production Management, Washington, D. C. A copy of the letter and resolution was also sent to Director Sidney Hillman of the O.P.M.

"Dear Sir:

"The low priority rating given to manufacturers of cement, lime, gypsum and allied products, which has created a serious situation in these four industries, was brought to the attention of our Biennial Convention held in Columbus, Ohio, September 8-13, 1941, with over 200 delegates in attendance, representing local unions in almost every state in the Union. This low rating does not permit these manufacturers to secure the necessary equipment and repair materials so vitally needed in the continuous operation of the plants, thereby causing reduced production and temporary periods of unemployment among these workers.

"You no doubt are aware that the products produced by our membership are playing a vital and important part in our National Defense program, and anything that causes a stoppage of work curtails the shipment of these necessary products. We also desire to call your attention to the fact that most of these plants are located in very small communities and widespread unemployment among these workers would have far-reaching effects on these small localities. Dislocation of these workers or forcing them to secure employment in other industries is a disrupting influence in the small, largely home owning communities.

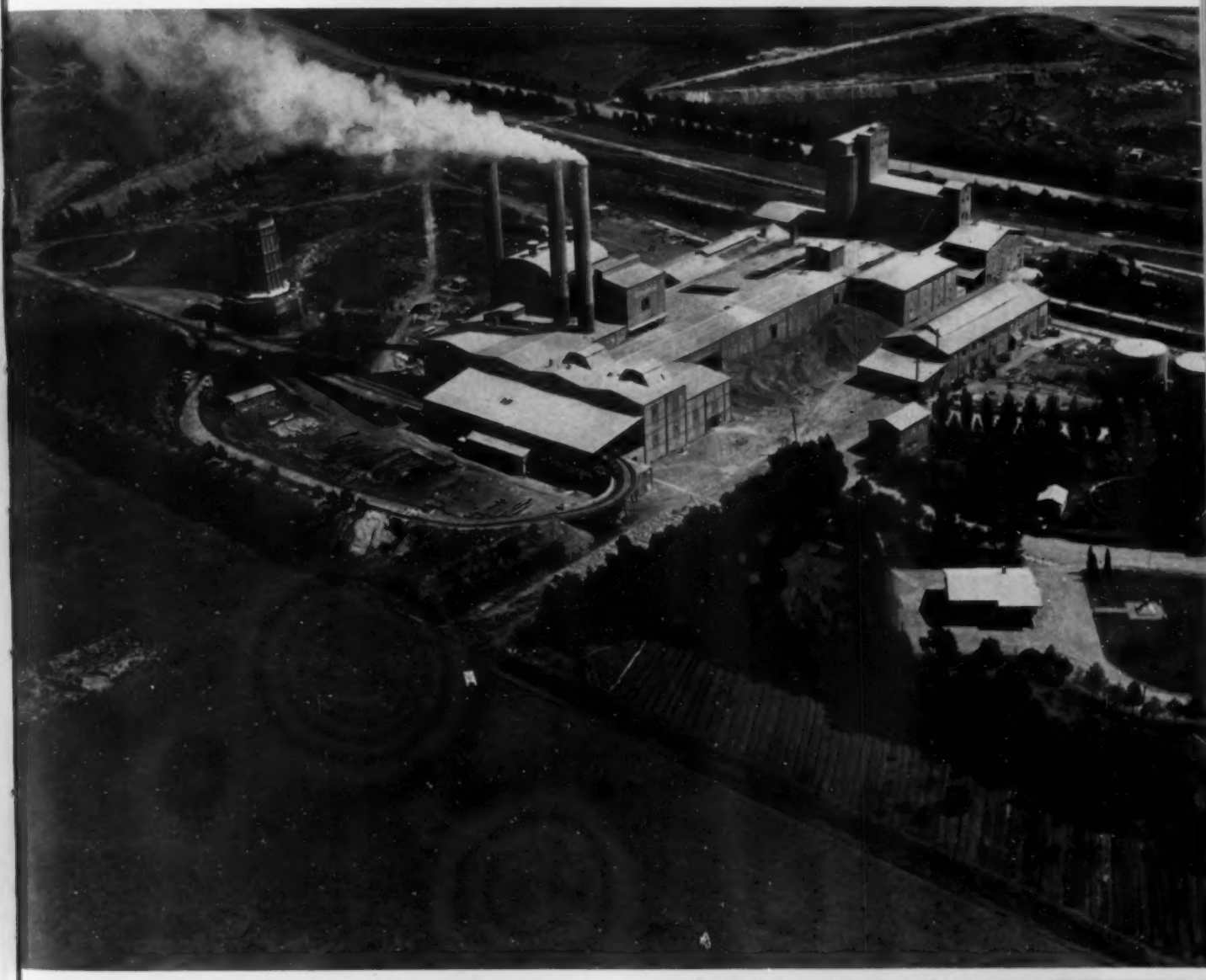
"Our International Union, as well as the delegates attending the convention, viewed this situation with considerable alarm because it tends to defeat the purpose of our Pledge made in June, 1940, when we were one of the first International Unions to definitely declare ourselves on a no-strike policy and in full and complete coöperation with the Federal Government and our worthy President, in defense of our government, its institutions, and our way of life.

"We, therefore, urge your department to review the priority ratings given to the cement, lime, gypsum and allied industries and such ratings raised in order to permit the free flow of all types of material so necessary to keep these plants in continuous operation."

The above is from the October issue of *The Worker*, official publication of the Union.

LATIN AMERICA'S
Cement Industry Expands

The articles which follow describe and illustrate the interesting progress made by cement plants in our sister republics to increase capacity in meeting demands for cement formerly imported



Airplane view of modern cement plant operated by Cemento Portland Lomo Negro, near Olavarria Province of Buenos Aires, Argentine Republic

STURTEVANT

AIR SEPARATORS MEAN BIGGER PROFITS FOR MORE OPERATORS EACH YEAR

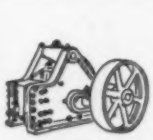
More Than 300 STURTEVANTS Sold

FOR CEMENT ALONE

—300 Sturtevant Air Separators have been sold and none rejected. This record speaks for their superiority—and in addition, hundreds of Sturtevant Air Separators are used in other non-metallic mineral fields.

IN OTHER LANDS, TOO

Recognition of the prominence of Sturtevant Air Separators extends to other countries also, as evidenced by the numerous Sturtevants used in South America, Mexico, Canada, England and Australia.



Jaw Crushers

Rotary Fine Crushers

Crushing Rolls

Ring-Roll Mills

Moto-Vibro Screens

Swing-Sledge Mills

STURTEVANT Can Be Your Safeguard for Quality Products

With Sturtevant Air Separators you can be sure of consistent production at any reasonable fineness. Range of work is between 40 and 350 mesh. Capacities can be handled from ¼ ton to 50 tons per hour at low cost per ton for power and upkeep. Sturtevants have large feed openings, steep cones, and rigid construction. Ball and roller bearings are used.

LET OUR ENGINEERS TELL YOU ABOUT THIS OTHER PROFIT PRODUCING EQUIPMENT

Crushing Rolls . . . for dry or wet reduction
Jaw Crushers . . . heavy or light duty
Moto-Vibro Screens . . . screen anything screenable
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Swing-Sledge Mills . . . for coarse and medium reduction
Rotary Fine Crushers . . . for intermediate and fine reduction

STURTEVANT MILL CO. HARRISON SQUARE BOSTON, MASS.

Most recently completed plant of Compañia Argentina de Cemento at Parana, subsidiary of Lone Star Cement Corporation, uses flotation

Our Latin American Neighbors

Cement industry in Latin American countries experiencing boom in business requiring plant improvements and construction of new mills

By NATHAN C. ROCKWOOD

NORTH AMERICAN MANUFACTURERS of portland cement have profited from shutting off of imports to Central and South America from Belgium Denmark and Germany. However, Latin America, despite greatly increased demand for cement, is rapidly becoming self-sufficient in producing capacity. Practically all the new manufacturing equipment being installed is coming from the United States, although British machinery manufacturers have been able to compete, notwithstanding war demands. United States machinery is in demand and some provision is being made for priorities to fill these orders.

The developing market for cement in Latin America is the result of greater industrial activity following the cutting off of European manufactured products and increased highway building that is partly a result of the stimulus supplied by gifts and loans from the Treasury of the United States. The accompanying maps show progress toward a Pan American highway system, which will doubtless be added to from time to time. Moreover, this idea of a Pan American highway is not new. The United States began 12 years ago to appropriate funds for surveys and engineering services to assist highway building by our Good Neighbors to the South.

Some idea of distances can be gained by the fact that the route from the Texas border through Mexico and Central America to the Panama-Colombia border is 3500 miles and there are some 4600 miles

Crushing plant and quarry of Compañia Uruguaya de Cemento Portland at Minas, Uruguay

Quarry at Brazilian subsidiary of Lone Star Portland Cement Corporation has one of the largest draglines in the world

in the system south of there, including, however, the alternate routes.

Mexico and Central America

A FRIEND IN MEXICO supplies the following data on developments in the cement industry there and in Central America: There has been more construction in Mexico during the past three years than during the preceding ten years. Most of this construction consists in dwellings, apartment houses, office buildings, hotels, tourist camps, and in the replacing of old structures with the modernistic.

Dams, hydro-electric projects, and irrigation works, have consumed a considerable amount of cement, while paving of streets in some of the cities, and repairing of docks and harbors at some of the ports, has taken a considerable tonnage of cement. The opening up and improving of a number of resort towns as a result of the increase in tourist travel within Mexico, as well as from the United States, has accounted for a large number of new hotels and private homes.

Increasing Capacity

Cement companies in Mexico have continued to increase their plant capacities but are at the present unable to keep up with the demand. During 1939 Cemento de Mixcoac, S. A., with plant on the outskirts of Mexico City, installed a Lepol kiln, and at the present time is preparing for the installation of a 300-ft. kiln. This company is also installing more grinding equipment.

Cementos Guadalajara, S. A., formed several months ago, is now actively engaged in the construction of a two-kiln plant at Guadalajara, Jalisco. It is expected that this plant will be in operation before the end of 1941.

Cementos de Apasco, S. A., with plant at Apasco, Hidalgo, continues to operate its one kiln plant at capacity.

La Tolteca, Compania de Cemento Portland, S. A., operates at capacity its three-kiln plant at Tolteca, Hidalgo.

Compañia Manufactura de Cemento Portland, Cruz Azul, Jasso, Hidalgo, which was one of the first industries expropriated by the Mexican Government, continues to be operated by the workmen, while Cementos Hidalgo, located at Hidalgo, Nueva Leon, and the second cement plant to be expropriated by the government some years ago, is also operated as a coöperative society by the workmen.

Cemento Portland Nacional, with plant at Hermosillo, Sonora, supplies a considerable amount of cement for dams and irrigation systems being built by the Mexican Government in the North. This plant is the only wet process plant in Mexico, and has one kiln.

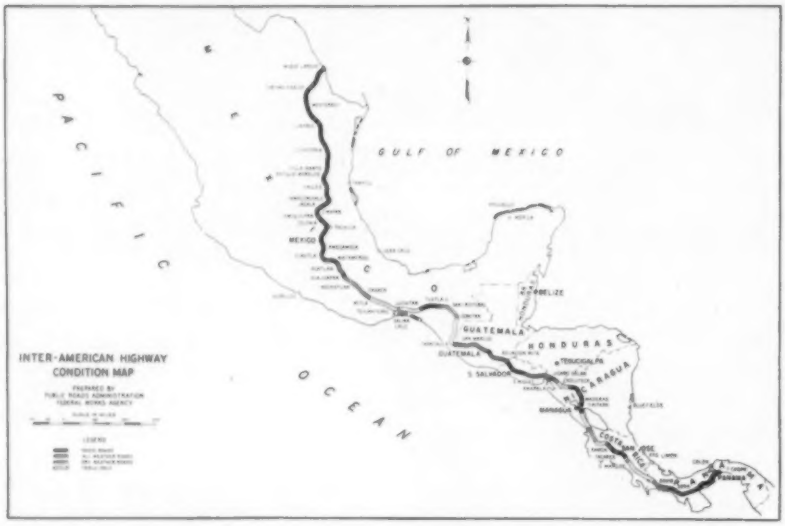
Cementos Atoyac, S. A., with plant at Puebla, Pue., operates at capacity and is considering expansion. This company recently acquired the small plant of Cementos Indio, S. A., also located at Puebla.

Cementos Mexicanos, S. A., with a two-kiln plant at Monterrey, Nueva Leon, has operated at capacity a number of years. This company also produces a white portland cement.

With increases in capacity planned by existing cement companies, together with the placing in operation of the Guadalajara plant, it is expected that the demand in Mexico for cement will be taken care of.

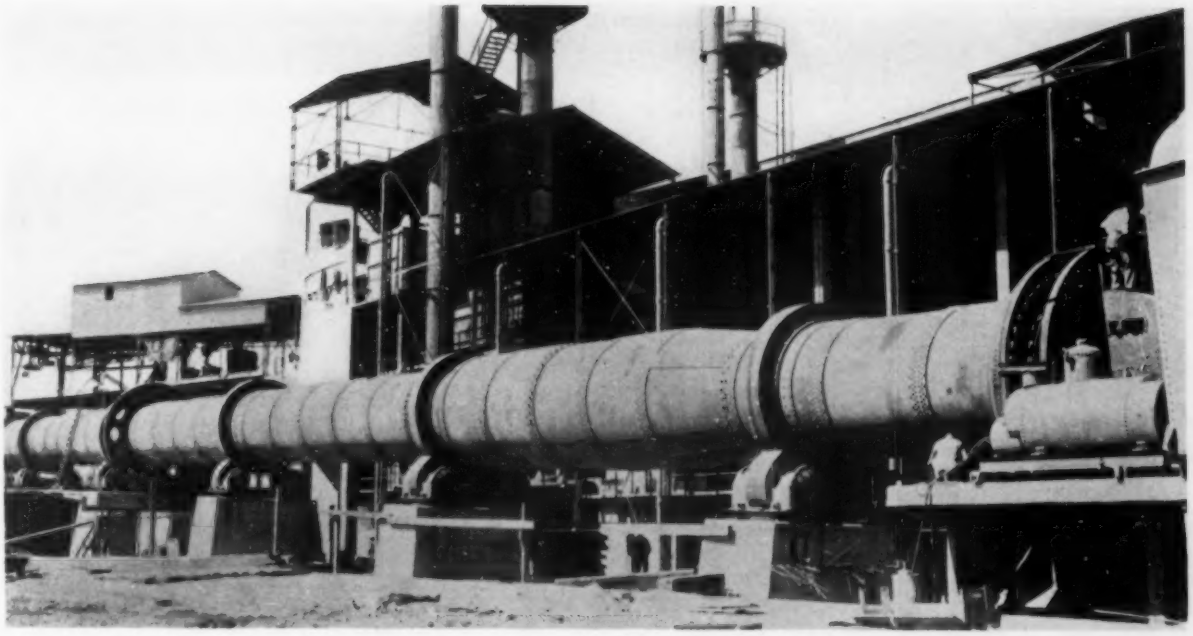
Only One Plant in Central America

At this writing the only cement company operating in Central Amer-



Above: Map of Mexico and Central America showing location of the great Pan American Highway and the present status of construction

Right: Map of South America on which has been located the Pan American Highway and the condition of the roads of which they will form a part



Dry process cement plant of Juan Minetti E. Hijos, Ltd., Mendoza, Argentina equipped with 8½- x 10- x 260-ft. Allis-Chalmers kiln

ica is that of Fabrica Nacional de Cemento, Novella y Cia., with plant on the outskirts of Guatemala City, Guatemala. The Novella plant has one kiln, and produces portland and special cements, as well as lime.

There has been considerable talk about cement plants to be located in other Central American countries. In Nicaragua machinery has already been purchased for a small plant, while in Costa Rica a concession has been given by the Government to local interests for the establishment of a small plant. Numerous projects have been drawn up for cement plants in Panama, and it is thought likely that one will be built there in the near future.

San Salvador imports some of its cement from Guatemala, while Honduras obtains its cement from the United States. According to a survey recently made, the consumption of cement in each of the small Central American countries is sufficient to warrant the installation of small cement plants, and with the building of the Pan American highway and the opening up of these countries to trade and tourist travel, now limited in view of poor transportation and communications, the demand for cement products will rise appreciably. At present cement sells for from $16 to $25 per ton in Central America, while hydrated lime, which is consumed in great quantities in the combating of banana disease, sells for from $15 to $20 per ton.

From a United States Bureau of Mines report issued about a year ago (I. C. 7102), the following table is taken, which not only offers a comparison of production statistics with those of the United States, but gives an idea of progress in the various countries by showing the per capita yearly consumption of cement:

SALIENT STATISTICS OF THE CEMENT INDUSTRY OF LATIN AMERICA[1]

Country	Plants operating	Plants under construction	Production (metric tons)	Consumption (metric tons)	Per-capita consumption, bbl. (376 lb.)
Mexico	7	1	344,693	356,450	.11
Argentina	9	2	1,035,496	1,145,357	.53
Bolivia	1	0	61,841	63,993	.12
Brazil	6	0	571,452	646,283	.09
Chile	1	0	313,110	313,622	.40
Colombia	3	1	144,000	196,884	.13
Ecuador	1	0	13,674	[2]23,000	.05
Paraguay	0	0	0	5,000	.03
Peru	1	0	101,707	143,205	.13
Uruguay	2	0	147,773	166,597	.47
Venezuela	1	0	44,626	164,126	.28
Central America	1	0	[2]27,000	[2]115,660	.09
West Indies	2	0	([3])	290,000	.13
Total	35	4	[4]2,805,372	3,630,177	.17
United States	151	2	17,857,119	18,219,204	.81

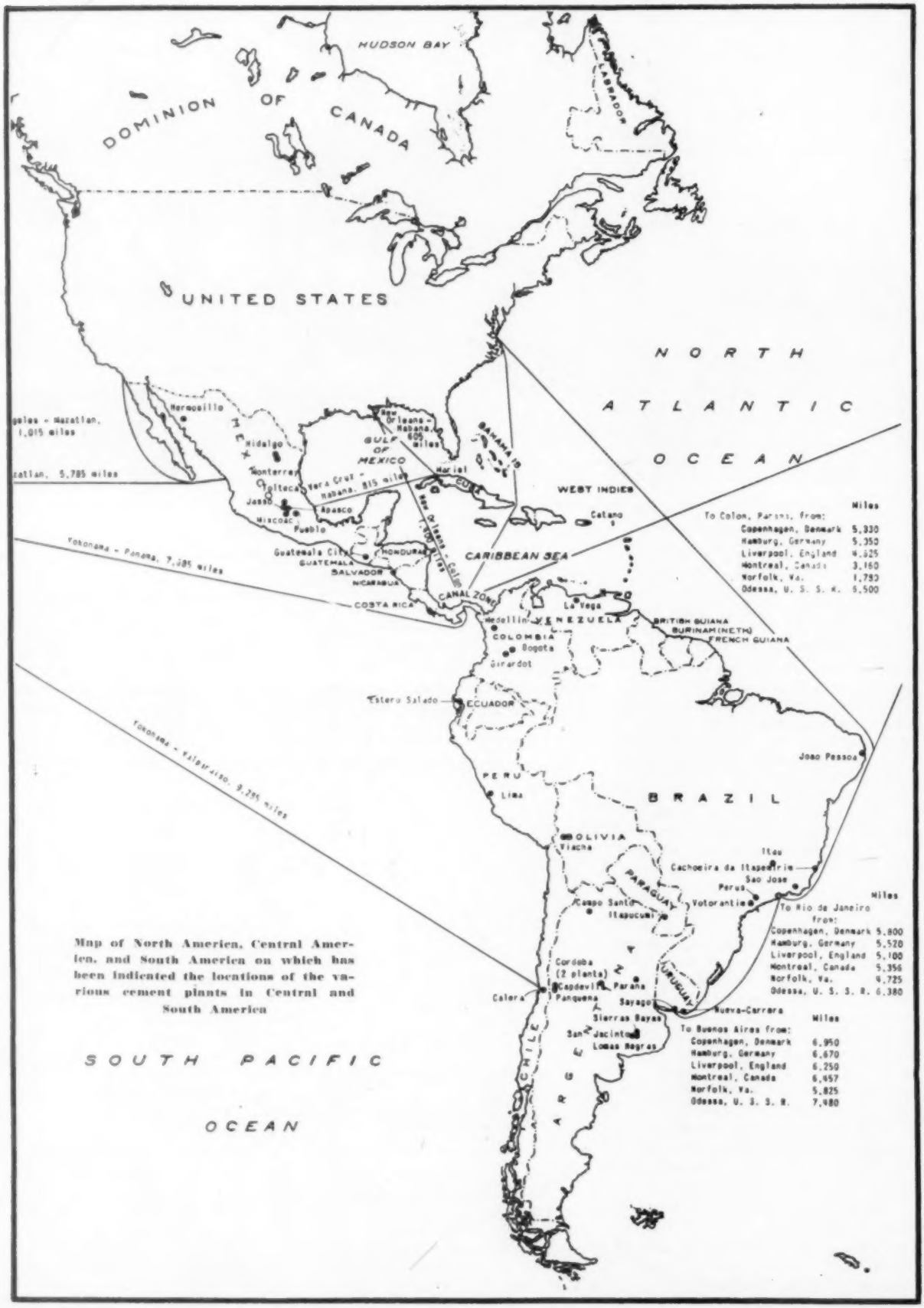
[1] Most of the data on production and consumption are for 1937, but in a few instances earlier or later figures are used.
[2] Estimated.
[3] Bureau of Mines not at liberty to publish.
[4] Excluding West Indies.

A metric ton (1000 kg.) is equivalent to 2,204.6 lb., or very close to 6 bbl. of 376 lb. each.

The statistics given, however, are not recent enough to present a realistic picture of the industry today in some of these countries, particularly in Colombia, Brazil, Argentina and Chile.

Activity in South America

According to a more recent report of the United States Bureau of Mines, in Venezuela one or two projects for new cement plants are said to be very active. In Colombia by the end of 1940 three new cement plants, Compañia de Cementos Argos and Marmoles Cementos del Nare, S. A., both at Medellin, and Cementos del Valle, S. A., Cali, had been established. Plans were under way for the construction of two additional plants, one at Narino and the other at



To Colon, Panama, from:	Miles
Copenhagen, Denmark	5,330
Hamburg, Germany	5,350
Liverpool, England	4,825
Montreal, Canada	3,160
Norfolk, Va.	1,790
Odessa, U. S. S. R.	5,500

To Rio de Janeiro from:	Miles
Copenhagen, Denmark	5,800
Hamburg, Germany	5,520
Liverpool, England	5,100
Montreal, Canada	5,356
Norfolk, Va.	4,725
Odessa, U. S. S. R.	6,380

To Buenos Aires from:	Miles
Copenhagen, Denmark	6,950
Hamburg, Germany	6,670
Liverpool, England	6,250
Montreal, Canada	6,457
Norfolk, Va.	5,825
Odessa, U. S. S. R.	7,480

Map of North America, Central America, and South America on which has been indicated the locations of the various cement plants in Central and South America

Santander. In Brazil the S. A. Fabrica Votorantim of Sao Paulo has recently built a cement plant in Paulista, State of Pernambuco. Plans are being studied for construction of cement plants at Baiá and Rio Grande do Sul.

The rapid growth of the portland cement industry in Brazil in the past few years is illustrated by the accompanying table:

PRODUCTION AND IMPORTS, IN METRIC TONS

	1935	1936	1937	1938	1939
Production	366,261	485,064	571,462	617,896	697,793
Imports	115,389	83,013	79,280	54,092	41,099
Consumption	481,650	568,077	650,742	671,988	738,842
per capita, kg.	11.9	13.6	15.3	15.5	17.0

The largest operation in Brazil, that of the Cia. Nacional de Cemento Portland, Rio de Janeiro, is a subsidiary of the Lone Star Cement Corporation of New York. A list of the portland cement manufacturers of Brazil follows:

BRAZILIAN PORTLAND CEMENT INDUSTRY

Name of company	Locality	Capacity metric tons
1. Fabrica de Cimento Barbara	Cachociro, Espirito Santo	20,000
2. Cia. Brasileira de Cemento Portland, S.A.	Perus in Sao Paulo	200,000
3. Cia. Nacional de Cemento Portland	Guaxindiba in Sao Goncalo, Rio de Janeiro	306,000
4. S. A. Fabrica Votorantim	S. Helena, Sorocaba, Sao Paulo	168,000
5. Cia. Parahyba de Cemento Portland	Joao Pessoa, Parahyba	90,000
6. Cia. de Cimento Portland Itau	Itau, Passos, Minas Gerais	45,000
7. Electro Guimica Brasileira S.A.	Soramenha, Ouro Preto, Minas Gerais	40,000

Argentina Industry

The cement industry of Argentina is of particular interest in that it got started in 1872 at Cordoba with a Roman cement plant. However, the first large modern plant was built in 1919 with American capital—a subsidiary of the International Cement Corp. (now the Lone Star Cement Corp.), which has two plants in Argentina. A list of the Argentina cement plants is shown below.

Most of the statistics of capacity given above are of 1937 or '38 date, and it is probable that these have been increased in some instances.

Colombia Industry

According to the United States Bureau of Mines three cement plants were in operation in Colombia as follows:

(1) Fabrica de Cemento Samper built a plant near Bogota many years ago. Machinery was supplied by German manufacturers.

The plant capacity is 50,000 tons.

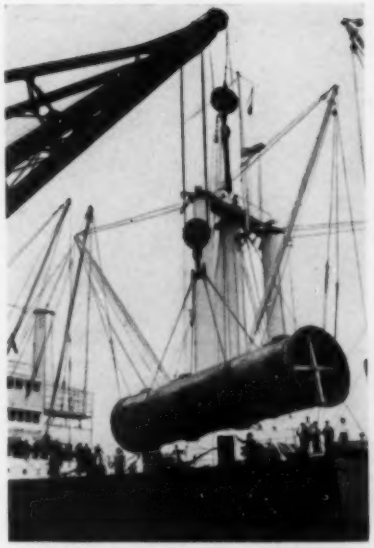
ARGENTINE PORTLAND CEMENT INDUSTRY

Name of company	Locality	Capacity metric tons
1. Compañia Argentina de Cemento Portland	Sierras Bayas (Buenos Aires)	400,000
2. Compañia Argentina de Cemento Portland	Parana (Entre Rios)	135,000
3. Loma Negra, S.A.	Lomas Negras (Buenos Aires)	450,000
4. Calera Avellaneda, S.A.	San Jacinto (Buenos Aires)	60,000
5. Sud Americana de Cemento Portland	Cordoba (Cordoba)	250,000
6. Sud Americana de Cemento Portland	Compo Santo (Salta)	145,000
7. Sud Americana de Cemento Portland	Panquena (Mendoza)	300,000
8. Corporación Cementera Argentina, S.A.	Córdoba (Cordoba)	70,000
9. Corporación Cementera Argentina, S.A.	Cap-devila (Mendoza)	46,000
10. Corporación Cementera Argentina, S.A.	Papinas (Buenos Aires)	120,000
11. Compañia Industrial Nortena	Frias (Santiago del Estero)	100,000

(2) Compañia de Cemento Portland Diamante, Apulo, with a capital of 2,840,000 pesos ($1,589,065) operates a plant near Girardot, Province of Cundinamarca. Construction of the plant, for which equipment was supplied by Danish manufacturers, was begun in 1927, and production began toward the end of 1930. Capacity is 108,000 metric tons.

(3) Compañia de Cemento Argos, with a capital of 657,000 pesos ($367,611), Medellin, Province of Antioquia. Machinery was supplied by German manufacturers.

A new plant was under construction at Medellin in 1939. The operating company is Cia de Marmoles y Cementos del Nare, and the contract for construction was in the hands of an English machinery manufacturer. The annual capacity of the plant was to be 87,000 metric tons. It is not known whether the English manufacturer was able to complete his contract.



Unloading an 8- x 40-ft. Traylor three-compartment cement mill at Valparaiso, Chile which is destined for installation at the El Melon plant at La Calera, Chile

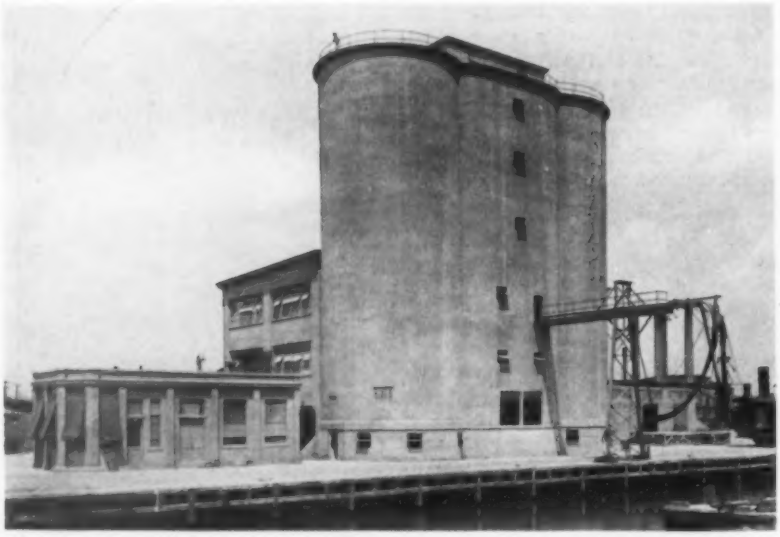
Other South American Plants

Bolivia has one plant, according to records available, the Sociedad Boliviana de Cemento, La Paz, which has a capacity of 25,000 tons. It has largely American machinery.

Chile has one plant, the Sociedad Fabrica de Cemento de El Melon, Calera, with a capacity of 400,000 tons per year. This plant makes special cements as well as standard. Another company had a project for a plant near Santiago, the Fabrica de Cemento El Romeral. No statistics are available.

Ecuador has one small plant of a capacity of 17,000 tons at San Eduardo, near Guayaquil. The enterprise has been through three reorganizations, and is now operated under lease to American capital as La Cemento Nacional C. A.

Paraguay has a small plant which is reported to have operated intermittently since 1926.



Storage bins and packing plant of the Cuban subsidiary of Lone Star at Havana

Peru has one plant operated by Compañia Peruana de Cemento Portland, at Lima. It has a capacity of 172,000 tons.

Uruguay has two plants, one the Compañia Uruguay de Cemento, at Sayago, which is a subsidiary of the Lone Star Cement Corp., New York, and the Compañia Nacional Cemento, at Nueva-Cararra, which is a subsidiary of the Compañia de Materialos de Construccion of Montevideo. It is said to have a capacity of 40,000 tons.

Following are descriptions of typical plants, for which we are indebted to the officers of the various companies.

Lone Star Plants

Lone Star Cement Corporation, New York, N. Y., owns and operates subsidiaries in Argentine, Brazil, Uruguay and Cuba. The productive capacity and the character of the plants make Lone Star an important factor in the industry in Latin America.*

The plant in Sierras Bayas, Argentine, started production at the beginning of 1918. At that time there was no modern cement manufacturing plant in Argentine. The original plant consisted of two kilns with a capacity of about 850,000 bbl. per year. Three additional kilns were installed later, and the completed plant now has an annual output of 2,200,000 bbl.

Located about 200 miles from the city of Buenos Aires, almost in the center of the Province of Buenos Aires, one of the most fertile agricultural sections of the country, this plant is a dry process unit with a waste heat power installation. At the present time air separators are being installed in the raw grinding department, in an effort to reduce still further the power consumption for grinding, as well as the fuel consumption for burning.

Standard portland cement is marketed under the trade name "San Martin" and high early strength cement under the trade name "Incor." Both brands enjoy the highest standing with the various Government departments, as well as with engineers and the consuming public.

In 1938 a second plant was built in the Argentine by Lone Star at the city of Parana about 200 miles north of Buenos Aires.

The plant is located on the banks of the river Parana, with facilities for loading direct on boats for water transportation. This is a wet process plant employing flotation for the preparation of the raw material, consisting of limestone and clay which is obtained adjacent to the plant. A full description of this plant appeared in Rock Products of November, 1938. The Parana plant manufactures standard portland cement under the trade name "San Martin" and high early strength cement under the trade name "Incor." Equipped with all modern facilities, this plant takes care of a fast growing section of the country.

The plant in Uruguay was purchased in 1919 from its original builders. It was built about ten years before with European equipment and operated with a small production just previous to and during the War.

After Lone Star took over the plant, it was rebuilt with American equipment and gradually brought up to a capacity of 1,600,000 bbl. per year.

Raw materials for this plant consist of limestone shipped by rail from Minas, about 75 miles distant, and clay which is adjacent to the plant. Power is purchased from the State Electrical plant.

The Uruguayan plant produces standard portland cement under the trade name "Artigas" and high early strength under the trade name "Incor." This is a modern wet process plant, fully equipped for all present day requirements.

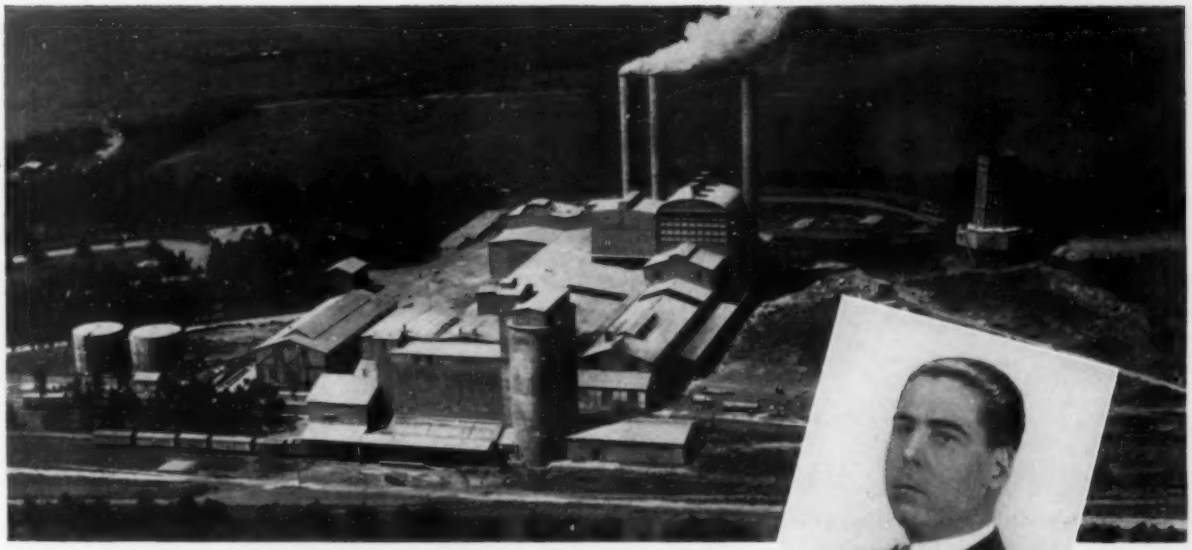
Lone Star entered Brazil in 1931 when it began the construction of a modern wet process plant at Guaxindiba, about 25 miles from the city of Rio de Janeiro. Raw materials consisting of limestone and clay are obtained from quarries at Sao Jose, transported over 12 miles of private railroad. At this quarry is installed one of the largest electric draglines equipped with the longest boom in the world. The boom is 250 ft. long and carries a 12-cu. yd. bucket, stripping the overburden off the limestone deposit. The limestone and clay are then loaded into railroad cars with 4-cu. yd. electric shovels.

The original installation consists of one kiln 11¼- x 10 x 400-ft. long. The plant had a yearly capacity of 900,000 bbl. In 1935 one additional kiln was installed, making the capacity of the plant 1,800,000 bbl. At the present time an 8- x 9- x 240-ft. kiln is being installed to bring the capacity up to 2,200,000 bbl. This plant is of reinforced concrete construction throughout, and with its highly modern equipment is one of the most imposing cement manufacturing plants in existence. The power plant, built in 1938, is designed for high efficiency employing steam of 650 lb. pressure at 825 deg. F. total temperature. Fired with fuel oil, this plant with normal fuel cost has been able to compete successfully against hydro electric power. Now with the mounting cost of fuel oil, arrangements are being made to purchase the greater part of the power requirements from the Hydro Electric Co.

The Brazilian plant produces standard portland cement under the trade name "Maua" and high early strength cement under the trade name of "Incor."

The plant in Cuba was the first plant built by Lone Star Cement Corporation in Latin America. It started production in 1918. At that time there was only one small old-fashioned plant in Cuba, and the Lone Star plant has since furnished practically all the cement used on the Island.

* For the information about Lone Star plants in Latin America, we are indebted to E. Posselt, vice-president, Lone Star Cement Corporation.



Above: General view of Cemento Portland Loma Negra plant. Inset: Senor Alfred Fortabat, president of the company

Big Wet Process Plant

Four kilns operated by Loma Negra, Argentine cement plant have two types of slurry dryers

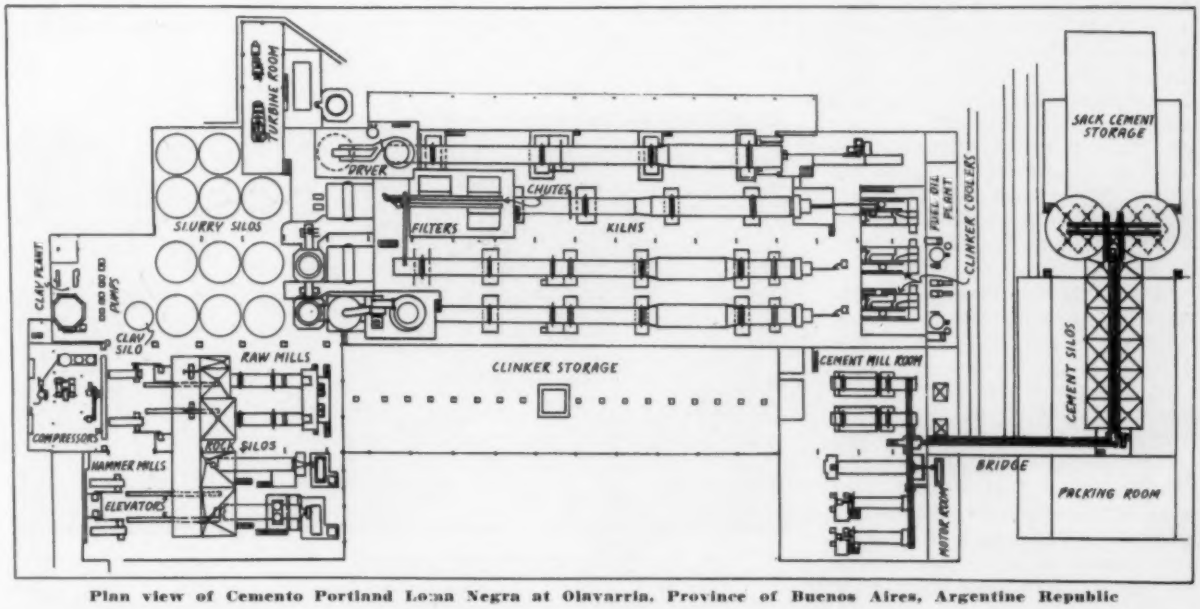
ANOTHER IMPORTANT CEMENT PLANT in the Argentine Republic is Loma Negra, S. A. Compania Industrial Argentina. It is located at Loma Negra, Olavarria, F.C.S., and is wet process.

Raw materials, limestone and clay, are obtained by open pit quarry operations. Rock is brought down by explosives, and the drilling is by means of well drills. Steam shovels load dump cars operating over narrow gauge track to the plant.

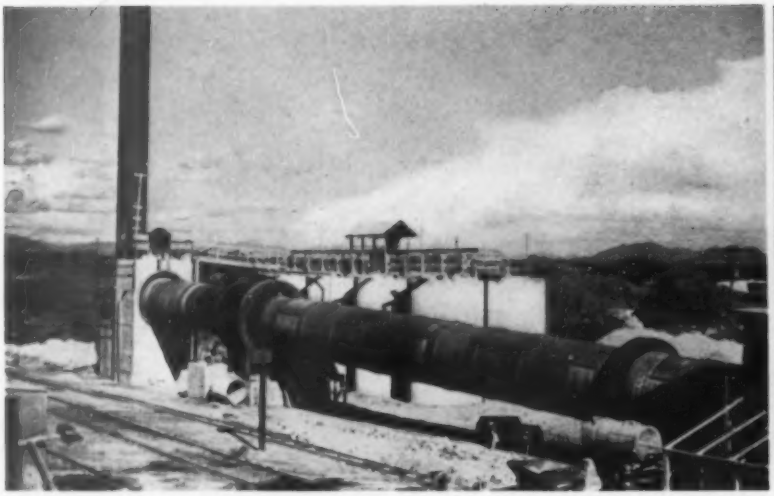
Hammer mills (Type Z) reduce the rock to a size ready for milling, and the clay is dissolved in a pool from which it is elevated by a ferris wheel to clay silo storage. Hammer mill product is raised by an inclined bucket elevator to a chute which deposits the crushed rock in the overhead silos feeding the raw grinding mills. Clay slip is transported by pumps to the mills.

There are four compartment tube mills for raw grinding. Three are Solo-Polysius units having the following dimensions and power requirements: 6.56 x 42.64-ft., 400-hp.; 7.22 x 42.64-ft., 650-hp.; and 7.87- x 42.64-ft., 800-hp. A Contra-Krupp mill is 7.22 x 42.64-ft. and is powered with a 650-hp. motor. Clay slip is fed to the mills by a ferris-wheel type of feeder located at the bottom of the rock silos feeding the mills.

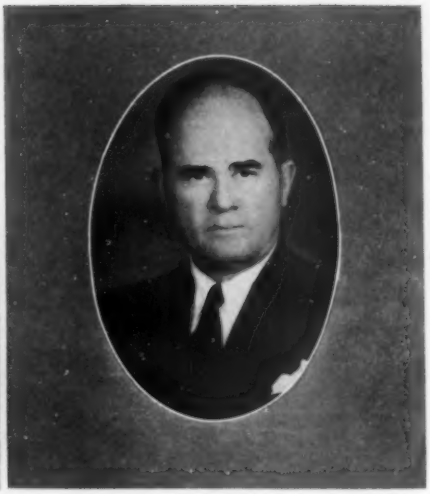
(Continued on page 50)



Plan view of Cemento Portland Loma Negra at Olavarria, Province of Buenos Aires, Argentine Republic



Close-up of 8- x 150-ft. kiln of Cemento Portland Nacional, S.A., Hermosillo, Mexico



Ygnacio Soto, president and general manager of the cement company

Low-Heat Cement In Mexico

Small cement plant in Hermosillo, Mexico produces a high-quality low heat cement for large irrigation dam

By Y. SOTO*

CEMENT having very satisfactory low-heat qualities is being manufactured at the Cemento Portland Nacional, S. A., Hermosillo, Sonora, Mexico, about 220 miles south of Nogales, Arizona. It is a wet process unit, operating an 8- x 150-ft. kiln, with a capacity of 500 bbl. per day. The process and the plant equipment are illustrated in the accompanying pictorial flow diagram and the plant views.

The cement is being produced for Angostura dam on the Bavispe river, about 90 miles south of Douglas, Ariz., and its main purpose is the irrigation of lands in the Yaqui Valley, about 350,000 acres. The dam is a concrete gravity arch 300 ft. high, 574 ft. long at the crest, and 102 ft. thick at the bottom. About 96 percent of its projected 240,000 cu. yd. of concrete is in place, and the Hermosillo plant has supplied about 255,000 bbl. of low-heat cement.

In 1937, when the Mexican Government Commission of Irrigation drew the cement specifications for this structure, it was aimed to secure cement which would develop the least possible amount of heat to prevent cracking of the concrete, and which at the same time would be very efficient in developing strength and water-tightness with a minimum consumption per cubic yard of concrete.

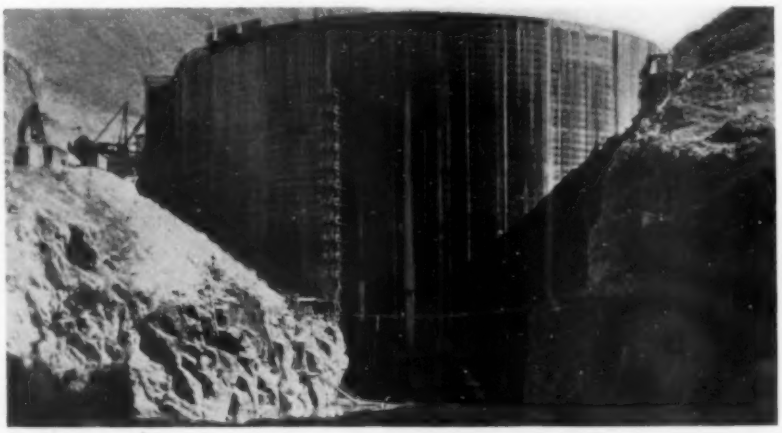
The answer to the problem was to get the largest possible content of efficient compounds (silicates) and the minimum of the undesirable, like tricalcium aluminate, alkalies (sodium and potassium oxides), magnesia and free lime.

The result was most gratifying as can be seen in the general composition of the cement delivered by the Hermosillo plant, which is as follows:

COMPOUND	PER-CENT
Tricalcium Silicate	27.2
Dicalcium Silicate	50.6
Total Silicates:	77.8
Tricalcium Aluminate	4.0
Tetracalcium-Alumino-Ferrite	11.8
Total Aluminates:	15.8
Sodium Oxide—Na_2O	0.51
Potassium Oxide—K_2O	0.33
Total Alkalies—$Na_2 + 0.658\ K_2O$	0.73
Magnesia—MgO	1.3
Free lime	0.8

The cement is unusually efficient on account of the high content of total silicates, almost 78 percent, instead of 72 percent, usual value for low-heat cements. Undesirable compounds, such as tricalcium aluminate,

*President and general manager, Cemento Portland Nacional, S. A.



Angostura dam from upstream, spillway construction to the left, and penstock openings at the bottom. This big irrigation project has provided a large market for low-heat cement

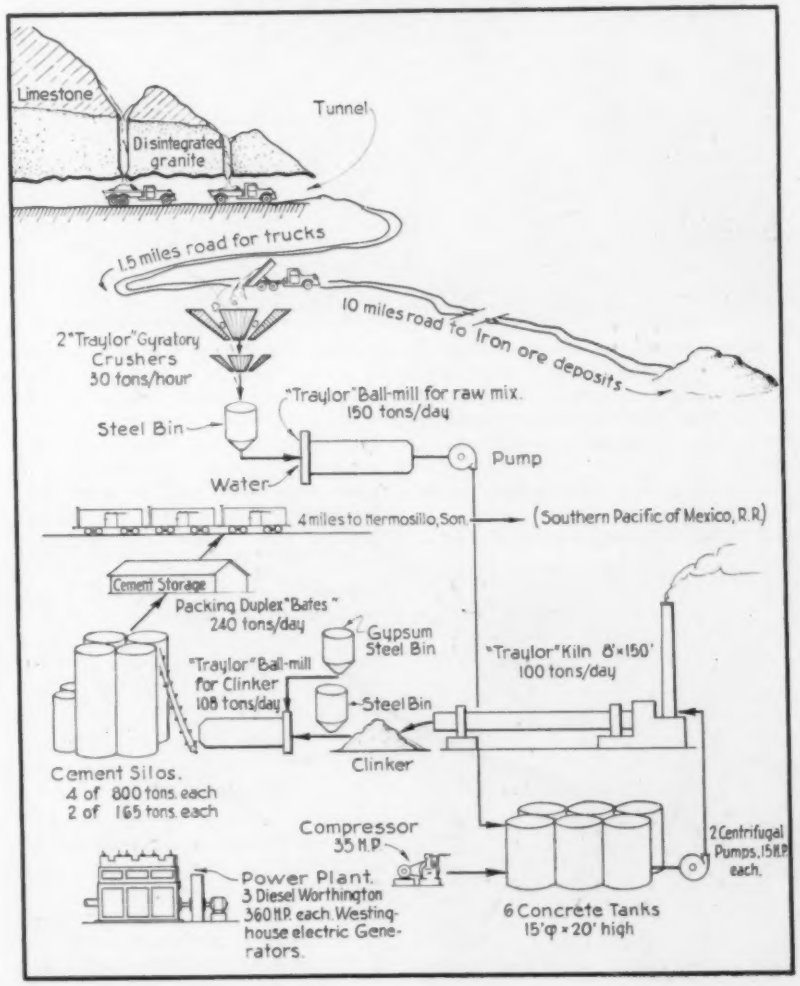
E. G. Quiroga, superintendent of the cement plant

Cement plant of Cemento Portland Nacional, S. A., Hermosillo, Sonora, Mexico

alkalies, magnesia and free lime, are lower than the usual values for cements of this type.

Favorable composition of the raw materials available, was, of course, the principal factor that made possible this success. The limestone is very pure: less than 1.5 percent $MgCO_3$, very little Al_2O_3 and about 5 percent silica which accounts for the high content of total silicates.

Graphic flow sheet of cement manufacture at the Hermosillo, Mexico plant from the quarry to the cement storage silos


Limestone
Tunnel
Disintegrated granite
1.5 miles road for trucks
10 miles road to Iron ore deposits
2 "Traylor" Gyratory Crushers 30 tons/hour
"Traylor" Ball-mill for raw mix. 150 tons/day
Steel Bin
Pump
Water
4 miles to Hermosillo, Son.
(Southern Pacific of Mexico, R.R.)
Cement Storage
Packing Duplex "Bates" 240 tons/day
Gypsum Steel Bin
"Traylor" Ball-mill for Clinker 108 tons/day
Steel Bin
"Traylor" Kiln 8'×150' 100 tons/day
Clinker
Cement Silos. 4 of 800 tons each 2 of 165 tons each
Compressor 35 H.P.
2 Centrifugal Pumps, 15 H.P. each.
Power Plant. 3 Diesel Worthington 360 H.P. each. Westinghouse electric Generators.
6 Concrete Tanks 15'φ × 20' high

Disintegrated granite of uniform composition and high silica/alumina ratio furnishes an acid material very suitable for the purpose.

Uniformity of the raw materials and accurate manufacturing control made it possible to keep a very close adjustment on the tricalcium silicate content. In warm weather, April to November, this compound was kept within the limits of not less than 20 and not more than 24 percent, while in winter, when a higher rate of strength development was required, it was raised to be within 26 to 28 percent.

Such a close adjustment of the tricalcium silicate content, was a great help in the construction, since the required strength was always secured at the proper time, thus facilitating the anchorage of forms, their removal, etc.; at the same time it was possible to keep the evolution of heat to a minimum. The cement used in winter produced 52 calories per gram, while the one used in warm weather produced only 49. Both figures are given for the age of 7 days.

The Hermosillo cement, with a very low content of aluminates, can be easily adapted to make cement of retarded set, for the grouting of oil-wells, foundations, joints in concrete structures, etc.

All the activities of the Hermosillo plant are under the general direction of Ygnacio Soto, president and general manager; Edgardo G. Quiroga is superintendent of the plant. Adolfo Orive Alba (C.E.) is executive commissioner for the Mexican Commission of Irrigation.

One of the two 7- x 200-ft. kilns in the dry process Cordoba plant. Note cooler installation below

Buy Off-Peak Power

Argentine cement company, operating one wet and two dry process plants, also uses supplementary Diesel-electric units for power generation

CORPORACION Cementera Argentina, S. A., was founded in 1931 with the object of supplying the interior markets of the Argentine Republic having relatively poor consumption. To reduce labor costs as much as possible, large milling units were installed which only required operation for 8 to 10 hours per day to give sufficient capacity for the kilns with only a single shift for the mill operators. This was made possible by buying cheap electricity in the off-peak hours.

This company possesses two dry process plants in the cities of Cordoba and Mendoza and a wet process plant at East Pipinas, Province of Buenos Aires.

Cordoba Dry Process Plant

For the Cordoba plant, the company quarries a crystalline limestone of high calcium carbonate content and a stiff clay. The stone is crushed in a Dixie Mogul model 5024 hammer mill and drying is not necessary. Clay is dried in a rotary dryer which is fired by the waste heat gases from the kiln. The kiln is oil-fired.

Grinding is done in two 7- x 26-ft. Traylor compartment mills with three compartments. One mill, used in raw grinding, is fed by Schaffer poidometers. The other mill for clinker grinding is fed clinker by means of a rotating table type of feeder.

Raw material and clinker storage bins at the Cordoba plant are under cover

Material is blended by drawing from silos installed under the mills by means of special "Garbar" chain drags.

Originally the installation comprised a single 7- x 200-ft. Traylor kiln with a 6- x 60-ft. Traylor rotary cooler. However, in 1935, a second kiln of the same size and make was purchased. The combustion system includes heat recovery from the clinker, from radiation in the cooler, and partly from the kiln.

The end section of the cooler is used as a mill to control the clinker size. There are also damper controls and electric apparatus for analyzing the combustion gases.

As sufficient electric current was not available from the light and power company of Cordoba, four 825-hp. Diesel-electric units were purchased to generate electric power at 2300 volts, 50 cycles. The large motors are G.E. super-synchronous type. Smaller G.E. motors operate at 380 volts.

Cement and raw ground rock are transported by means of a Fuller-Kinyon pump system. Bates bagging machines are used to pack cement. The plant produces 82,000 metric tons of normal portland cement annually under the trade name of "Corcemar."

Two kilns in the Mendoza plant are oil-fired. Production is 110,000 metric tons

Mendoza Plant

In 1936 a plant was installed at Mendoza under the same conditions as at Cordoba, utilizing similar material and nearly identical with the exception that the machinery is of F. L. Smidth manufacture. It includes a 7.21- x 41.33-ft. mill for raw grinding, a 7.21- x 36.08-ft. mill

to Cut Down Costs

Marcelo Garlot, president and technical director of Corporacion Cementera Argentina

for clinker, and the original oil-fired Unax kiln with an enlarged hot zone preceding the clinkering zone. The cooler is a Unax. A second Unax kiln was installed in March, 1938. Both kilns are 6.89- x 8.53- x 226.32-ft. and are oil-fired. Installed production is 110,000 metric tons annually. (Metric ton = 1.10 tons.)

Pipinas Plant

This plant set a company record not only because the construction work required the transportation and installation of 54,000 tons of material in only nine months, but also because of the discovery of a huge bank of natural cement making conglomerate material.

The technical studies and tests of the materials required only a few months.

It is a wet process plant. Primary crushing is by means of a Model 5040 Dixie Mogul. Grinding is done in 7.87- x 46-ft. compartment mills having four or five compartments. There are four correction silos and a 16.4- x32.8- x 229.6-ft. rectangular slurry storage tank. The rotary kiln has a heating zone enlarged to 10.81-ft. diameter with calcination and clinker-forming zones of 11.15 ft. diameter, and a total length of 354.24 ft.

The vertical cooler for tempering the air is an annular grill type patented by President Garlot. This is designed to prevent damage to the cooling chambers which are cooled by water, no metal being in contact with the hot clinker and in which all mechanical parts may be changed while in service.

Combustion instruments provide automatic control of air, fuel, and firing of the kiln operating for 24 hours under predetermined air conditions. All the materials are handled like the other plants making "Corcemar" cement. The materials are transported to a central storage area, 393.6- x 393.6-ft., by means of two large cranes. Cement is transported from the mill room by Fuller-Kinyon pumps which receive cement from eight silos through electro-pneumatically controlled valves. The eight silos have a capacity for one month's production. Bates packing machines are used to sack cement. Production at this plant is 160,000 metric tons annually.

At the Pipinas plant, power for all operations is furnished by a modern Diesel-electric power plant, comprising four units.

Method of conveying raw materials from quarry to the Mendoza cement plant

Produces Two Types of Cement

This company produces portland cement in all its plants under the trade name "Corcemar" and in the Mendoza plant it manufactures a puzzolana cement called "Sigma" 30-70 which has been used successfully in hydraulic works (dam construction) in that province.

Employe welfare is of first concern for this company. Typical of the social work undertaken by this company is the new village for the workers constructed at the Pipinas plant. The center of activities is the new Corcemar hotel and hospital which is a reinforced concrete structure of modernistic design. Streets have been laid out with modern sewage facilities, and trees have been planted in the parkways. Homes for the workers also are of concrete. These structures also serve to promote the use of concrete for homes.

Long wet process kiln at the newest plant at Pipinas. To the left is the rectangular slurry tank with agitators mounted on a traveling overhead support

Big Wet Process Plant

(Continued from page 45)

Finished slurry from the mills is pumped to nine agitated correction tanks or silos. From the tanks, the slurry is pumped to the kilns.

There are four kilns, three 8.86- x 11.81- x 9.84- x 223.04-ft. Polysius-Solo kilns, and a 9.02 x 9.84- x 223.04-ft. Krupp. Kilns Nos. 1, 2, and 3 are equipped with Lee clinker coolers. Kilns Nos. 1 and 4 have Polysius slurry dryers, and kilns Nos. 2 and 3 have Imperial slurry filters.

After the clinker leaves the coolers, it is transported by a shaking type conveyor to a bucket elevator which feeds to another shaking type conveyor that distributes the clinker to a storage building with a capacity of 15,000 tons. Space is also provided outside this building for 50,000 tons of clinker. Gate valves in the storage building floor release clinker to a steel chute which carries it to a bucket elevator and then is chuted to silos feeding the clinker grinding mills. Gypsum is added in measured quantities as the clinker is fed to the mills.

Five compartment mills, each having three compartments, are used to grind clinker. Two are 6.56- x 39.36-ft. Solo-Polysius, requiring 450-hp. Two are 9.84- x 26.24-ft. Edgar Allen mills, taking 300-hp.; and one 7.26- x 42.64-ft. Contra-Krupp, requiring 300-hp.

Finished cement is handled by belt conveyors and bucket elevators which distribute the cement to storage silos. Cement is stored in a large rectangular storage house with 10 bins and two large silos, with a total capacity of 10,000 tons. Four Bates packing machines each have a capacity of 800 sacks per hour.

A complete physical and chemical testing laboratory is maintained to make frequent tests of raw material, clinker, and finished cement.

Power is furnished by Diesel engines and by steam turbines. Diesel engines comprise a Krupp of 1900-hp., a Busch-Sulzer of 2600-hp., a M.A.N. of 1000-hp., and one of 650-hp., two L.H.W. of 750-hp. and one of 270-hp.

Turbines consist of one Maffei of 2500-hp., and a Jököbing M.W. of 1500-hp. All units are connected to their respective generators to provide alternating current of 3300-volts, 50-cycles. Most of the 3300-volt current is used by the grinding mills, primary hammer mills, and compressors, the rest of the power being reduced in transformers to 220- 380-volt current for use by auxiliary equipment and for lighting.

The company maintains 400 homes for its workers, constituting a population of 2000 inhabitants. Free medical and hospital service is given, and an emergency first-aid station is maintained. A playground for small children is another part of social activities of the company. There are also visiting nurses. A sport field and a social and athletic club are part of the community.

Officers include Alfredo Fortabat, president; Alejandro Husson, general manager; and Jorge Boiso, manager of the technical and sales research department.

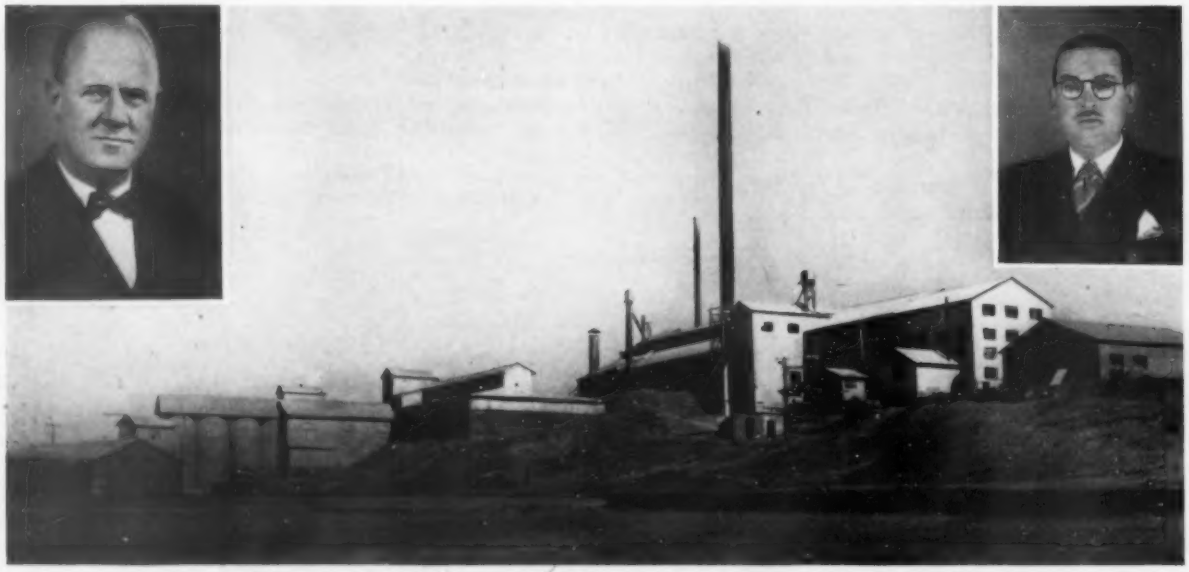
Highest Cement Plant in the World

LOCATED 12,960 ft. above sea level at Viacha, Department of LaPaz, Bolivia, the Sociedad Boliviana de Cemento is perhaps the world's highest cement plant. Compared to our plants in the United States and many in South America, it has a relatively low production, only 140,000 bbl. per year.

Most of the machinery is of Allis-Chalmers manufacture. It is a dry process plant with an 8- x 100-ft. Allis-Chalmers rotary kiln. Two years ago, a 3- x 24-ft. Allis-Chalmers air-quenching clinker cooler was installed. Raw materials as well as clinker are ground in Compeb mills, one 6- x 18-ft. and the other 6- x 16-ft.

The company has its own power plant composed of two Busch-Sulzer Diesel engines with a rated capacity of 325-hp. and 550-hp. at the altitude of the plant. Both Diesel engines are direct-connected to Oerlikon generators. All of the machines are driven by individual motors, most of which are General Electric type.

Officers include W. A. Pickwoad, chairman of the board and president; Guillermo Morris, vice-president; E. Aranibar, managing director; A. B. Ditmayer, works manager; and Bernardino Lazo, chief chemist.



Highest cement plant in the world is the claim for the Sociedad Boliviana de Cemento at La Paz, Bolivia. Inset, left, W. A. Pickwoad, chairman of the board and president, and to the right, E. Aranibar, managing director.

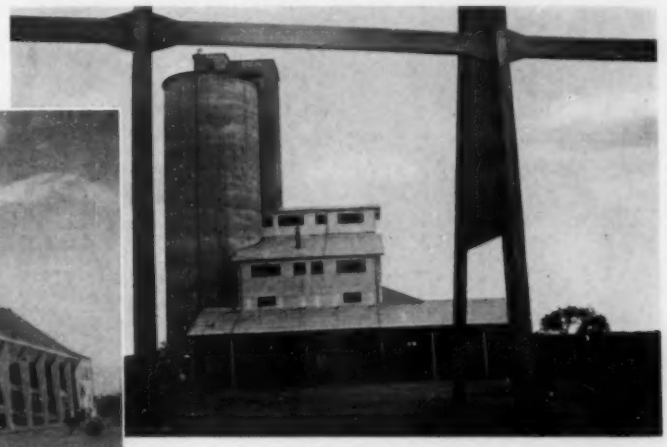
DIESEL POWER RUNS ARGENTINE PLANT

THREE MILES from Frias, in the province of Santiago del Estero, Argentine Republic, is the modern portland cement plant of La Compañia Industrial Nortena, Coiner Sociedad Anonima. Production started in December, 1937.

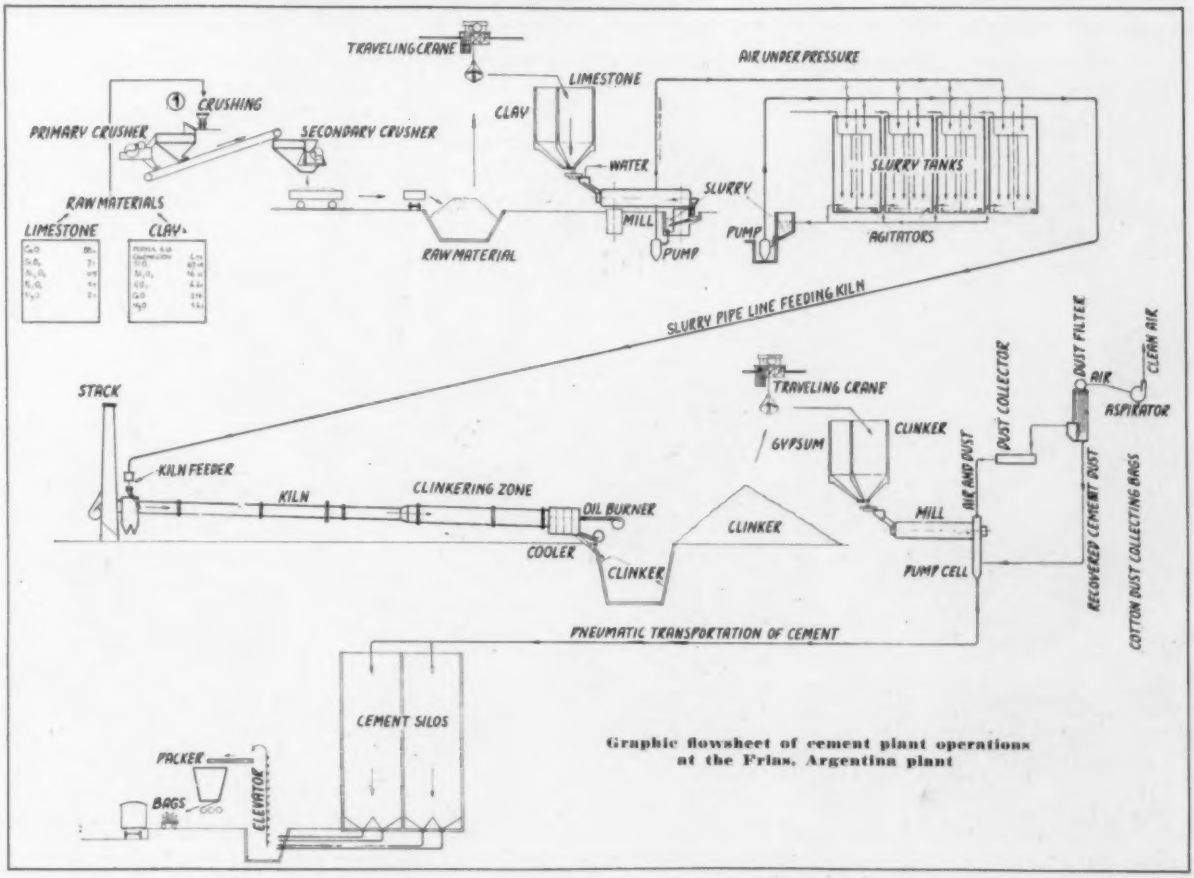
The limestone quarry is located 17 miles from the cement plant. After primary crushing, stone is transported to the plant over the State Railway. In the quarry is a crushing plant requiring 300-hp. in electric motive power which is supplied by a 20,000-volt high tension line and then reduced by transformers in the quarry to 380 volts.

At the cement plant, the crushed rock is dumped in a pit from which an overhead traveling crane distributes the material to silos. This crane

Below: Long wet process kiln in plant of La Compañia Industrial Nortena, Coinor Sociedad Anonima, Frias, Argentina



Above: Cement silos and packing house at Frias, Argentina. Note reinforced concrete structure



Graphic flowsheet of cement plant operations at the Frias, Argentina plant

also transports clinker to storage. Crane travel is 557.6 ft. at a height of 72.2 ft., and a span of 108 ft. The clamshell has a capacity of 4.58 cu. yd.

It is a wet process plant, the mill grinding crushed limestone and clay to a slurry containing 33 vercent water. The slurry is elevated by means of pneumatic compressors to the silos from which it is removed mechanically by compressed air. It is agitated well to form a homogeneous slurry suitable for the production of clinker.

The transportation of slurry from silos to the kiln feeder is effected by means of a centrifugal pump.

There are four zones in the Solo (Polysius) kiln, which is 9.84 ft. in diameter and 370.64 ft. long; (1) evaporation, (2) decarbonating, (3) clinkering, (4) cooling, the last three zones being lined with refractory brick.

Fuel is oil which is pumped to the burner at a pressure of 20 to 25 atmospheres.

The kiln is turned by electric power. On the burner platform is the control board and auxiliary equipment. This control board also has instruments indicating temperatures, stack gas analysis, recorders of rotation rate, raw feed rate, all for accurate control of manufacture.

After leaving the kiln, clinker is deposited in a pit 42.64 ft. deep from which it is carried by the traveling crane, previously mentioned, to the mill room silos or to clinker storage.

From the silos over the mill room, it is fed to mills after being mixed with the correct proportion of gypsum. The finished cement is elevated to silos from which it is chuted to automatic packing machines which have a daily capacity of 370-metric tons. The annual capacity of the Coinor brand is 125,000 tons.

In addition to portland cement, the company manufactures a ground hydraulic lime, and ground quicklime under the trade name of "Ancajan." Crushed stone aggregate and ballast also are produced.

Four Diesel motors with a total capacity of 3200-hp. provide power for manufacturing operations. These motors are connected to 3000-volt electric generators. The 900-hp. mill motors use this voltage, but the rest of the electric motors use 220- to 380-volts reduced by means of transformers. There are also compressors, fuel pumps and water pumps in the power house for general service.

For maintenance and repair of the equipment, there are modern machine and carpenter shops.

The personnel is housed in modern homes with all the comfort facilities.

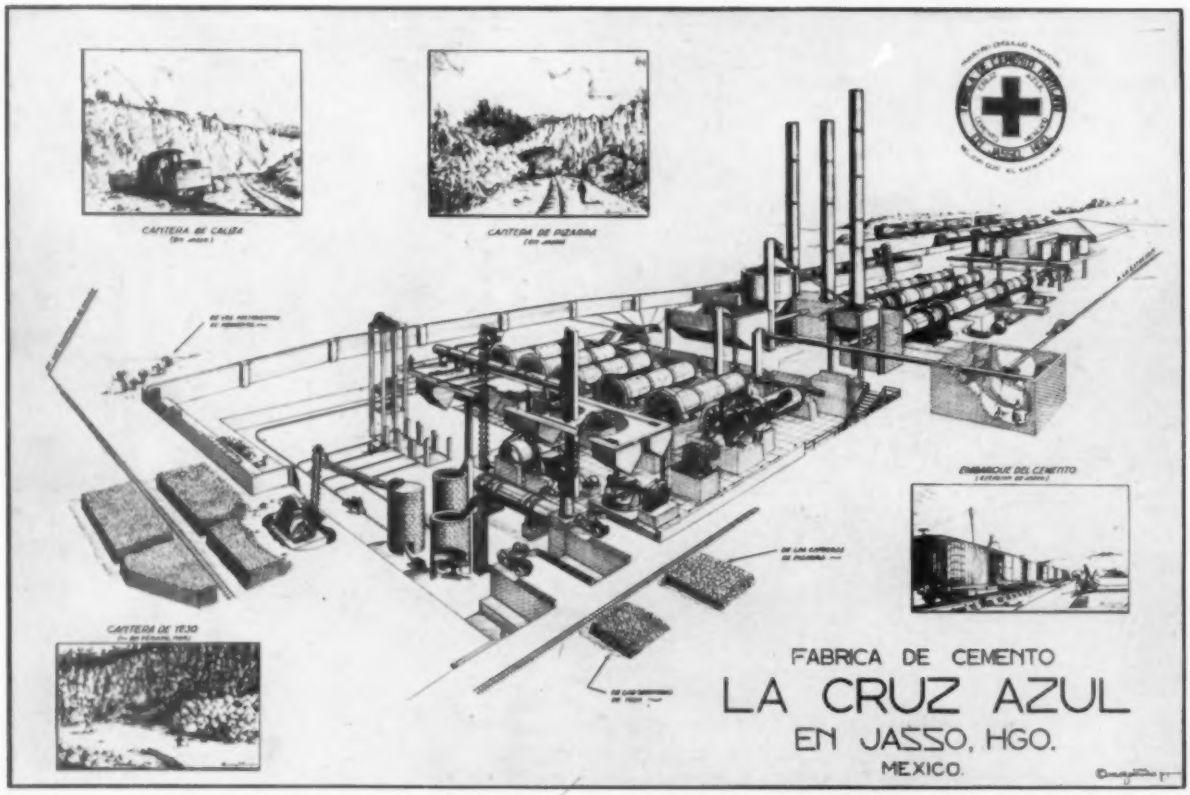
Cooperative Company in Mexico

In Jasso, State of Hidalgo, Mexico, about 44 miles from Mexico City, there is a coöperative cement plant operated under the name La Cruz Azul, S.C.L., or the Blue Cross Cement Co. This coöperative produces standard gray portland cement, a white portland cement, and gypsum.

Three quarries are operated for limestone, gypsum, and slate, and a source of iron ore is available on the property. Slate is used in place of clay in the manufacture of cement. The graphic flow diagram illustrates the cement manufacturing process and sources of materials.

Equipment in the cement plant comprises three 8- x 135-ft. kilns, two of which are Allis-Chalmers and a third Vulcan Iron Works type. There are two Allis-Chalmers ball mills, one large and one small unit; four Allis-Chalmers Compeb mills, two large and two small units; and a large Bradley Hercules mill.

Annual production is 450,000 bbl. standard portland cement.



Layout of the La Cruz Azul cement plant at Jasso, Mexico. Inset views, above, limestone quarry to the left, and granite quarry to the right. Below, left, is the gypsum quarry, and right, loading out cement

NO HAY PERDIDAS NI MOLESTIAS DE POLVO

Chimeneas Limpias
Sin Humo

● En la Compañia Permanente, California, están fabricando 16,050,000 Kilos de cemento al dia, y debido al empleo de su Precipitador Electrico Cottrell, están logrando ésto sin pérdidas de polvo o gas. El polvo recolectado en las tolvas del precipitador es conducido por el acarreador espiral al edificio de los hornos dónde es alimentado a éstos nuevamente. La instalación inicial ha sido tan satisfactoria que cuando agrándaron la fábrica ordenáron equipo Cottrell adicionál.

● En 1940 más del 40% de las órdenes recibidas por la Western Precipitation Corporation, fueron pedídos de repetición, atestiguándo con ésto, los resultados satisfactorios obtenidos con el equípo ya instalado.

● Dónde no se requiere una alta eficiencia de recolección, la Western Precipitation Corporation, ofrece el Multiclone. Este es un recolector mecánico especial requiriendo una baja pérdida de tiro.

● Nuestros Ingenieros están bien relacionados en Sud-America y han diseñado e instalado satisfactoriamente equipo para numerosas compañias Sud-Americanas, encontrandose entre ellas las siguientes:

International Cement Corporation
Rio de Janeiro, Brazil

Juan Minetti y Hijos
Dumesnil, Argentina

Cia Argentina de Electricidad
Buenos Aires, Argentina

Soc. Electricidad de Rosario
Rosario de Santa Fe, Argentina

Andes Copper Co.
Potrerillos, Chile

Cie Aramayo de Mines en Bolivie
Tasna, Bolivia

Bradeu Copper Co.
Calentones, Chile

Cerro de Pasco Copper Corp.
Oroya, Peru

Northern Peru Mining & Smelting Co.
Quiruvilca, Peru

COTTRELL
PRECIPITADOR ELECTRICO

Escriba Ud. hoy mismo por su copia de este interesante libro.

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405 Lexington Avenue, New York, U.S.A.
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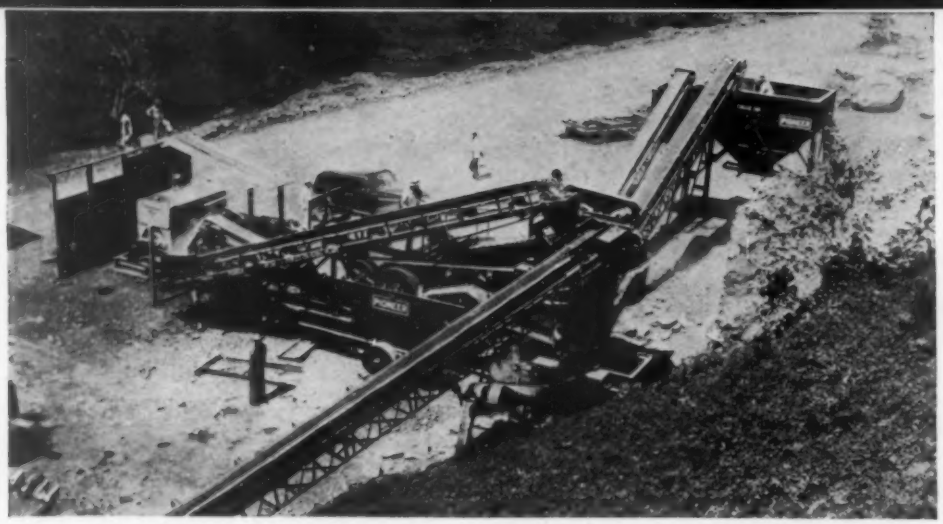
Hobart Building, San Francisco, California, U.S.A.

PRECIPITATION COMPANY OF CANADA, LTD.
Dominion Square Building, Montreal

COLOMBIA BUILDS GOOD HIGHWAYS

PIONEER PROCESSES THE MATERIALS



In Colombia, South America, they have started construction for surfacing of a National Highway system. Two projects are under way. One near Cucuta on the International Highway from Caracas, Venezuela to Bogota, Colombia. The other from Barranquilla to Cartagena.

On both jobs the surfacing material is crushed, sized and loaded thru a Pioneer plant.

The plants produce base course material, reject excess fines and produce stone chips for seal coat — all at the same time.

On the Cartagena work, the plant must operate in various set-ups and will handle gravel, limestone, conglomerate, caliche.

Top photograph shows the finished highway near Cucuta . . . Lower photograph shows the Pioneer plant which produced the surfacing materials for this road.

PIONEER ENGINEERING WORKS

MANUFACTURERS OF QUARRY, PIT AND MINING EQUIPMENT

CABLE ADDRESS: PIONEER • MINNEAPOLIS, MINNESOTA, U.S.A.

Improving Two Mexican Plants

Two dry process cement plants are operated in Mexico under different names but under the same management. These companies are Cemento de Mixcoac, S. A., located in Mexico City, D.F., and established in 1931, and the Compañia de Cemento Portland, S. A., in Tolteca, State of Hidalgo, which was started in 1909.

At the Mixcoac plant in the capital city, there are two oil-fired kilns; one being an 8- x 285-ft. Allis-Chalmers kiln with an enlarged burning zone 10 ft. in diameter that tapers to 9 ft. on the discharge end, and the other is a 9- x 90-ft. Polysius Lepol kiln.

Two 7- x 70-ft. Allis-Chalmers waste heat rotary dryers, used to dry crushed limestone and crushed clay, are heated with the exhaust gases of the rotary kiln. A Cottrell Precipitator collects the dust from the exhaust gases of the Allis-Chalmers kiln and the dryers. Limestone, clay and gypsum are crushed in a No. 5 Williams Mammoth crusher.

Raw materials and clinker are moved into storage by means of a 7½-ton Harnischfeger electric travelling crane equipped with a grab bucket.

Present equipment in the mill room includes a 7- x 8- x 32-ft. Allis-Chalmers Compeb mill for raw grinding in closed circuit with a 16-ft. Sturtevant air separator, and the same type and size mill and air separator combination for finish grinding.

New equipment being installed includes a No. 360 Babcock & Wilcox mill for raw grinding in closed circuit with a 16-ft. Sturtevant air separator, and a 9½- x 11- x 300-ft. Allis-Chalmers rotary kiln with air quenching cooler and waste heat dryer.

Fuller-Kinyon pumps are used to handle raw ground material and cement from mills to storage. Two three-tube Bates packers are used to bag cement. Present capacity of this plant is 924,000 bbl. annually, but with the new equipment will be increased to 1,724,000 bbl.

Tolteca Plant

Three Allis-Chalmers kilns are located in the Tolteca dry process plant: No. 1 is 8- x 135-ft., No. 2 is 10- x 150-ft., and No. 3 is 8- x 125-ft., all oil-fired. The kilns are connected to an 800-hp. Babcock & Wilcox waste heat boiler, which drives a G.E. 1100-kv.a., 440-volt, three-phase steam turbine-generator combination. Three 5-ft. 10-in. by 37-ft. Ruggles-Coles dryers are direct-fired with oil to dry clay.

An Allis-Chalmers No. 6 Gates gyratory crusher is employed for primary crushing of limestone and is followed by a 16- x 32-in. Sturtevant rolls for secondary crushing. Preliminary raw grinding is through a Bradley Hercules mill. Throughs go to four 6- x 22-ft., two-compartment tube mills for raw grinding.

Preliminary grinding of clinker is through a Bradley Hercules mill which is followed by three 6- x 22-ft., two - compartment Allis - Chalmers tube mills for finish grinding. An overhead electric travelling crane

Above: Tolteca, Hidalgo plant of Cemento de Mixcoac, Tacubaya, D.F.

Right: From left to right, Federico Sanchez Fogarty, sales manager; D. H. Gibbs, vice-president; K. Bannister, managing director; Luis Elek, general superintendent; and C. McCallum, accountant

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Round Strand
Flattened Strand
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PYRASTEEL
for high temperatures
SEGMENTAL
KILN ENDS

FOR any diameter of cement kiln . . . . . insures tight sealing, saves fuel, improves burning, reduces production costs. Standard units are easy to handle and simple to install. Segment can be replaced without tearing down ring. *Write for Bulletin.*

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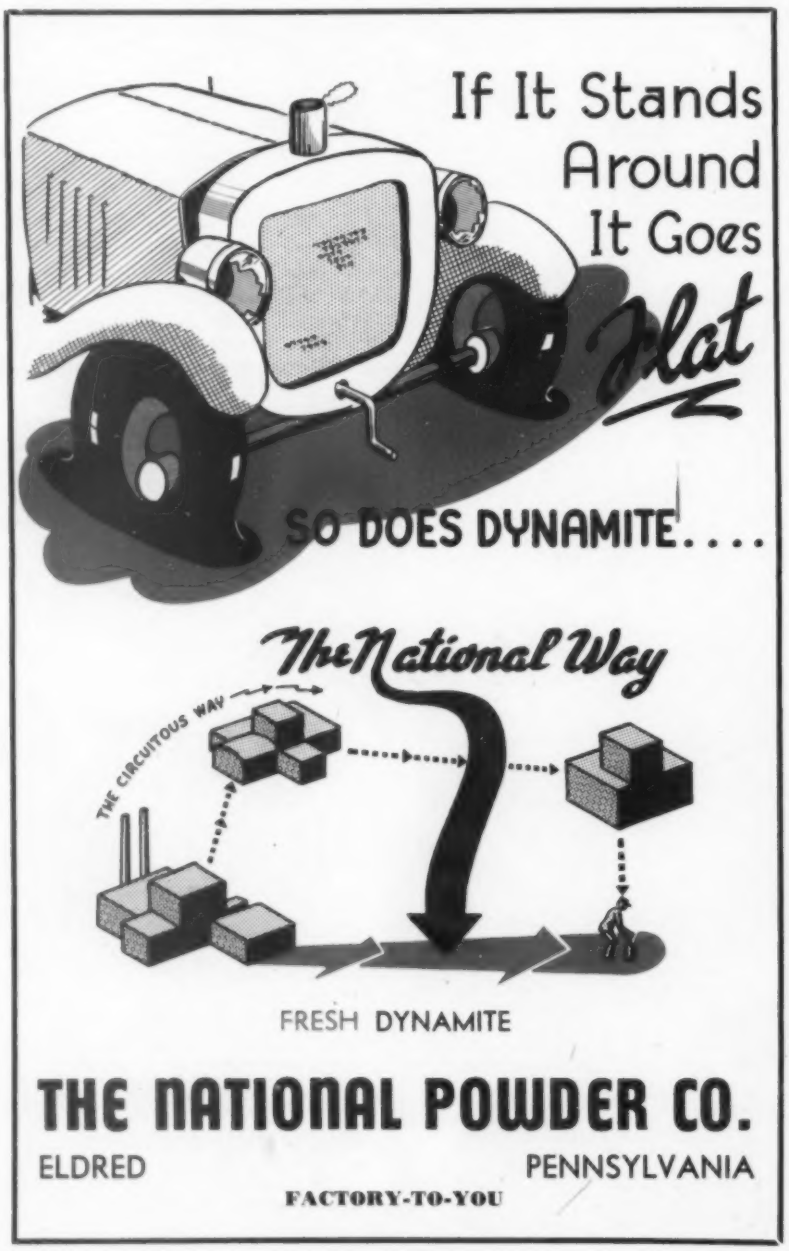
Chicago, Illinois
Makers of Alloy Steel for 30 Years

equipped with a 5-ton grab bucket, furnished by Shaw-Crane-Putnam Machine Co., is used to handle clinker to and from storage. To convey cement from mills to storage, 6-in. Fuller-Kinyon pumps are used. One three-tube Bates packer is used to bag cement. Annual capacity of this plant is 700,000 bbl.

Officers of these companies are: Sir P. M. Stewart, Saxon Works, Cambridge, England, president; D. H. Gibbs, vice-president; K. Bannister, managing director, Tacubuya, Mexico; Luis Elek, general superintendent; F. Sanchez Fogarty, sales manager; and Collin McCallum, accountant.

Left to right: Alberto Serna, president of Cia. de Cementos Portland Diamante, Bogota, Colombia; center, Juan de D. Ceballos, general manager; and right, F. de P. Acebedo, works manager



Gravity Haulage at Colombia Plant

IN A VALLEY surrounded by lofty mountains at Apulo near Bogota, Colombia, S. A., is the modern wet process portland cement plant of Fabrico De Cementos Portland Diamante (Diamond Portland Cement Co.).

Advantage was taken of this location in the design of the plant and the arrangements for transportation. As shown in the general view of the plant, it will be noticed that the trains of quarry cars, drawn by two 6-ton Plymouth gasoline locomotives, dump stone into a rock storage pit enclosed by high concrete walls at the sides. This storage pit is located high above the cement plant, and the material flows by gravity to the crushing plant. A 3-ft. Symons cone crusher is used.

A 16-in. Robins belt conveyor, 190-ft. centers, inclines upward to the top of the plant bins which feed the two F. L. Smidth raw grinding mills. One of the mills is a 4.92- x 31.48-ft. Unidan and the other is a 5.74- x 36.08-ft. Unidan.

Two F. L. Smidth Unax kilns have been installed, one of which is 6.23- x 7.38- x 193.52-ft., and the other is 7.38- x 8.36- x 246-ft.

Clinker grinding units are also F. L. Smidth Unidan mills, and they are identical in size to the wet grinding mills. A Fuller-Kinyon pump conveying system transports cement from the mills to the storage silos at the rate of 15-tons per hour. A rotary Fluxo packer has a capacity of 40-tons per hour. The annual production is 90,000 tons of portland cement.

All power is generated by the company, largely hydro-electric supplemented by a Diesel unit. The power house contains three Francis water turbines, each of 800-hp. capacity, driving three ASEA (Swedish) 3-phase, a-c, 6600/400-volt, 50-cycle, 700 kv.a. generators. Motors driving

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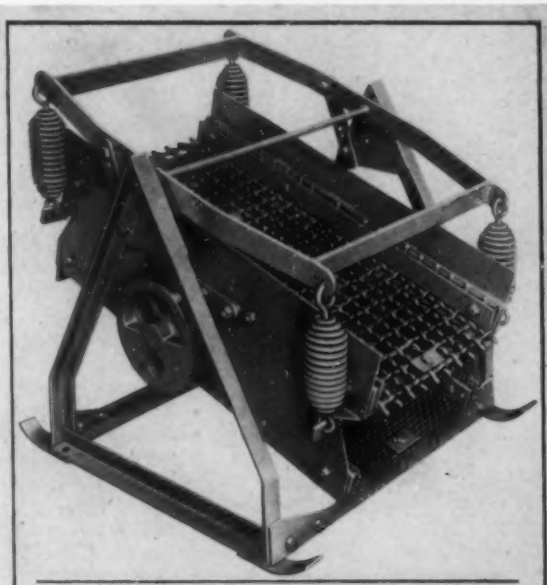

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ACCURATELY SEPARATES 100 TONS OF MATERIAL PER DAY INTO 3 PRODUCTS
USES ONLY A 1 H.P. ELECTRIC MOTOR OR 2 H.P. GAS ENGINE
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  Carlos F. Novella y Cia.
  La Pedrera, Guatemala City, Guatemala
- COMPANIA PERUANA DE CEMENTO PORTLAND
  Lima, Peru
- CUBAN PORTLAND CEMENT CORP.
  Cayo Mason, Pinar del Rio, Cuba
- "LA CRUZ AZUL," S.C.L.
  Jasso, Hidalgo, Mexico
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General view of cement plant of Cia. Cementos Portland Diamante at Apulo, Colombia. Note in background to the right the method of handling raw materials to the plant by gravity

equipment are General Electric, Westinghouse, and ASEA type. The Diesel is a Busch-Sulzer, connected to a 625 kv.a., 500-kw., a.-c., 3-phase, 50-cycle Westinghouse generator.

Officers of the company include Alberto Serna, president; Juan De D. Ceballos, general manager, and Francisco De P. Acebedo, works manager.

Chile's Modern Plant

EL MELON cement plant, located at La Calera, Chile, is operated by Sociedad Fabrica de Cemento de "El Melon." The plant has three 10- x 170-ft. Traylor kilns with 7- x 70-ft. Traylor coolers; two 10- x 240-ft. kilns made in Chile with F. L. Smidth coolers. Each kiln has a capacity of 10.2 metric tons per hour. There are four 7- x 26-ft. Traylor mills and two 8- x 40-ft. Traylor mills for raw grinding. For finish grinding, an 8- x 43-ft. F. L. Smidth Unidan mill and three 7- x 26-ft. Traylor mills are used. Two 6- x 22-ft. Traylor mills grind coal for kiln fuel. The annual plant capacity is 8,000,000 sacks of cement, each of which weigh 94 lb.

Official personnel includes Juan de D. Caballos, general manager, Valparaiso, Chile; Enrique Delgeon M., general superintendent of the cement plant; Rodolfo Mateluna Bello, general superintendent of the mines; and Brasil Drouilly B., chief chemist.

Left to right: Rodolfo Mateluna Bello, general superintendent of mines, El Melon plant; center, Enrique Delgeon M., general superintendent of the cement mill; and right, Brasil Drouilly B, chief chemist

Airplane view of El Melon cement plant in the mountains at La Calera, Chile

New Cement Plants In Latin America

AT PRESENT there is a total of 35 cement plants built and under construction in Latin America, and out of this number 22 have been constructed after 1930. Eighteen of these plants were largely supplied with equipment furnished by United States firms. This, of course, does not cover all the cement equipment supplied to Latin America as a number of the older plants have expanded their capacity during the same period.

New cement plants under construction in Latin America include the Votorantim Company's plant in Recife, the Itau Company's plant in Bello Horizonte, and the Compañia Nacional Productora de Cemento's plant in Nicaragua. Equipment for these plants is being furnished by F. L. Smidth & Co.

Celebrates Safety Record

MONARCH CEMENT CO., Humboldt, Kans., celebrated the winning of the PCA safety trophy for the fourth consecutive year with old-fashioned gingham - and - overalls picnic and celebration on October 4.

CONCRETE PRODUCTS AND CEMENT PRODUCTS

Permanent Defense Structures
Call for Concrete Units . . .
Wisconsin National Guard Armory
built with concrete units furnished by
Madison Silo Co., Madison Wisconsin

1-2-3 Vibrapacs installed by Barnes & Cone

SYRACUSE PLANT — Besser Vibrapac installed April, 1940.

ALBANY PLANT — Besser Vibrapac installed May, 1941.

AUBURN PLANT — Besser Vibrapac installed August, 1941.

Glen C. Barnes, President, Barnes & Cone, Incorporated, Syracuse, New York, installed his first Besser Vibrapac in the Syracuse plant in April, 1940. In May, 1941, a second Vibrapac was installed in the Albany Block and Supply Company owned by Barnes & Cone. In August, 1941, a third Vibrapac was installed in the Auburn Cement Products Company which they also own. These Vibrapacs are making both sand-gravel and cinder units. The Auburn plant is making large quantities of units for defense building projects. The trade mark "Barco Products" is familiar to everyone in the three areas where Barnes & Cone Plants operate.

The superior qualities of Besser Vibrapacs is emphatically acknowledged by a large number of Leading Concrete Block Manufacturers.

BESSER PLAIN PALLET STRIPPERS

A Besser Plain Pallet Stripper For Every Need

TAMPERS	Besser Super Automatic	8 Hr. Capacity 3120
	Besser Victory Automatic	8 Hr. Capacity 2160
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	Besser Champion, Power Operated	8 Hr. Capacity 1000 to 1200
	Besser Multi-Mold, Hand Operated	8 Hr. Capacity 250 to 350
VIBRATORS	Besser Super Automatic Vibrapac	8 Hr. Capacity 4800
	Besser Victory Automatic Vibrapac	8 Hr. Capacity 2160
	Besser Master Vibrapac, Hand Operated	8 Hr. Capacity 800

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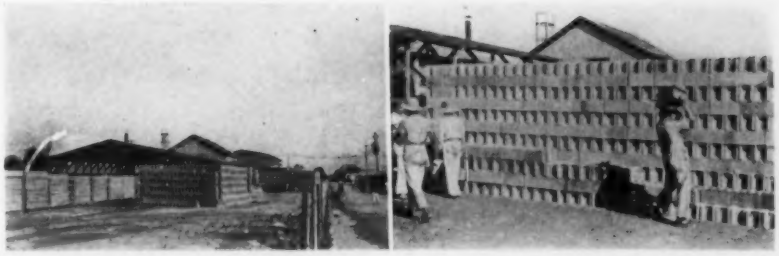
Complete Equipment for Concrete Products Plants

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

Modern block plant at Realengo, Brazil, to the left, and stockpile of blocks



Latin America Favors the Concrete House

By GEORGE W. HOFFMANN

UNTIL RECENTLY the Latin American countries have been feeling the clamp of European domination and dependence. By developing their own national industries they are gaining economic self-sufficiency.

It has been our Government's "Good Neighbor" policy, to help South American countries in their efforts to create independent economic structures, since we know very well that on the basis of purely commodity interchange, we can never expect to replace Europe as a former principal purchaser of Latin American products.

All Latin American delegates and visitors to our country admire the luxury of our homes and our appropriate, healthful and efficient housing.

Some changes and improvements in South American housing had been taking place since the end of the last World War. However, they were primarily in the direction of architectural design and layout but in no way changed the primitive basic ideas of construction and building materials.

Therefore, today most people all over Central and South America are still living in conditions way below the level of comfort and hygiene of our own housing standard.

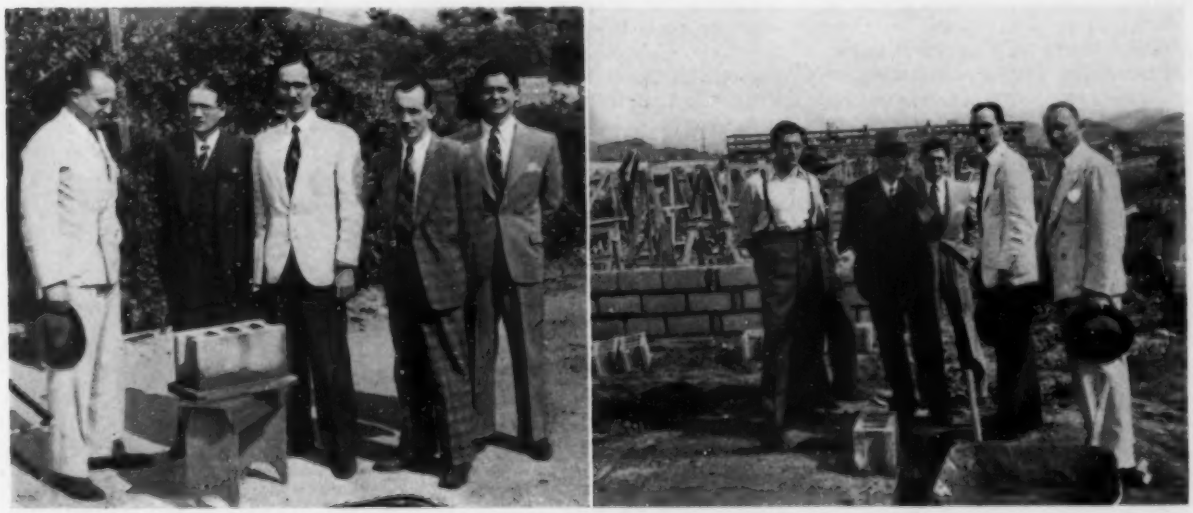
Both Buenos Aires and Sao Paulo, for example, two cities of several million inhabitants, suffer from permanent high humidities, but still prefer porous clay bricks to modern concrete building units.

In Buenos Aires, where the humidity ranges between 75 percent to 95 percent most all year around, contractors prefer to build structures one or 15 stories high of reinforced concrete framing with outside walls of hollow brick. These clay units are 3½- x 6- x 8-in. with a ⅛-in. clay shell and with six 1½-in. square holes throughout their length.

Since the building code requires an 8-in. wall thickness, these hollow clay blocks are placed wall side down, the spacious holes facing street and inside rooms, to be covered only with a cement base stucco plaster on both sides.

Only a very few buildings in Buenos Aires have central heating plants. With temperatures ranging from above 100 deg. F. in summer to below freezing in winter, these buildings are most uncomfortable and unhealthy to live in and, new and modern in design as they may be, they soon acquire that familiar odor noticed about many Latin American homes from mildew and fungus.

Strangely, the one advance Europe enjoyed long before our own country, construction in concrete building units, has never been adopted in the



Left: From left to right, George W. Hoffman, the author, looking at the one millionth block; C. Ponce de Leon, president Chilean government's housing and sanitation projects; Dr. Plinio Cantanhede, president of the Brazilian Social Security Institute; Dr. Sidney de Barros Barreto, chief engineer; and Dr. Lafayette Hermino de Freitas, director, engineer. Right: Same group looking over the project

Part of the great Realengo, Brazil housing project in which modern concrete masonry housing units and concrete pipe sanitary facilities replaced thatched huts

Latin Americas, which otherwise are so very European.

In Germany, the Scandinavian countries, and Italy, concrete blocks of varying aggregates have been fabricated and used for about 75 years. Italian builders introduced concrete blocks in Buenos Aires years ago. However, they were of such poor quality and sold at a price so high above brick, that the reputation of this building material was ruined then and there for good.

This fact is extremely regrettable because Argentina, Chile and Peru are very rich in pumice (Volcanic Ash), the finest natural light weight concrete aggregate, and of high efficiency in combatting humidity and for sound-conditioning a home.

These great pumice deposits are almost untouched, except for some testing material that has been used with great success by some progressive Argentine building engineers.

Wherever pumice is not available in South America, sand and gravel of the very highest quality is found in abundance close to practically every location where building block industries could be strategically located.

Cinders are very scarce and are available only in limited quantities because industrial developments are still comparatively small and gas plants very rare. All coal used in Argentina and Brazil so far has been imported from England. The manufacturing of light weight aggregates from slag or clay is still wholly unknown below the Rio Grande.

Recent developments in South America's building industries, however, are definitely pointing in a more promising direction. In Brazil, Argentina, Chile, Panama and Venezuela, government authorities in their struggle to improve economic conditions and the living standard, realize the importance of healthful and decent housing.

When they sent experts to our country to study housing conditions, they learned about rapid, sanitary, durable and inexpensive constructions in concrete building units and sanitary piping. With the efforts of American specialist manufacturers of machinery for the fabrication of such building units and concrete pipe, technical details of concrete construction were further introduced.

Venezuela and Brazil Concrete Housing Projects

When Venezuela and Brazil finally appropriated funds for some large Government housing projects, the study of building cost and design further favored concrete block and pipe construction to such an extent that expensive American machinery began to move below the Rio Grande. Much to the surprise of native builders these units cost but a fraction of native clay products manufactured at starvation wages by native labor.

From a sanitary viewpoint, prominent medical authorities began to study the argument of clay against concrete and favorable resolutions definitely recommended the use of concrete products in many progressive South American countries. Legislation has been passed in many countries for rehousing of the poor, and the only building materials that can be used on such projects, to keep within the budget appropriated, are concrete block and pipe.

In Brazil Government Social Security Institutes and privately owned savings banks are now creating entirely new cities, rehousing industrial and commercial labor and low wage employes from unhealthy, primitive dwellings into concrete block buildings. High capacity Besser machines have been used to make the units.

Near Rio de Janeiro, in the valley of Realengo, a city of 5000 two-family houses is under construction with 2300 houses already completed, housing 25,000 people on former waste lands. People that heretofore have been living in thatched huts, with only one room for living, sleeping, cooking and raising a brood of children, dogs and chickens, will be living in a clean, solid built three-room house, (large airy living room and two bedrooms) with bath, a kitchen, a large garden in back of the house, a front porch and well kept shrubbery all around. McCracken corrugated concrete sewer pipe drains off what formerly had been dumped and discharged around the "Rancho."

In Santa Catharina 400 such houses are already completed and occupied and many similar new cities are springing up near Sao Paulo, Pernambuco, Bello Horizonte and many other cities.

Progress In Chile and Argentina

In Argentina, only the War Department has so far approved concrete block buildings for its new military quarters.

In Chile, the still devastated area of the last earthquake of some four years ago is projected for rebuilding. Large pumice deposits on the location will make a model city possible here. New labor cities of concrete blocks will be built near Santiago, Valparaiso and Antofagasta.

(Continued on page 68)

Typical thatched huts which were replaced by modern concrete houses at Realengo

Uniformity Controls

Rebuild and re-equip ready mixed concrete plant to produce uniform strength characteristics

Above: Ready-mixed concrete plant. Aggregates elevated to top of plant by conveyors, to the right

Left: Washing out truck mixers in pool adjacent to plant

READY-MIXED CONCRETE has been established over the years in New Haven, Conn., by C. W. Blakeslee and Sons on a policy of high grade, uniform concrete that carries with it a guarantee of superiority. The company, long established in the aggregates and contracting businesses, went into ready-mixed concrete in 1930 but made a complete change in its plant in 1933.

Early experience in batching and delivering concrete revealed that uniformity was difficult of attainment without certain control apparatus and accurate equipment for batching. A guarantee that every batch of concrete is uniform was considered of most importance. Ready-mix concrete is sold by Blakeslee in competition with job-mix. Other local operators of ready-mixed concrete equipment have their mixers charged at this plant at a small charge for mixing.

In 1933, the company re-built its plant and resumed operations under license from the Scientific Concrete Service Corp., which had developed methods of concrete design and control apparatus to produce a product of definite characteristics. These methods comprise principles of mix design, moisture determinations in the aggregates and quick compensation therefor, positive control of the mixing water by weight and accurate weigh batching. The service involves the rental of the essential equipment and a small yardage royalty.

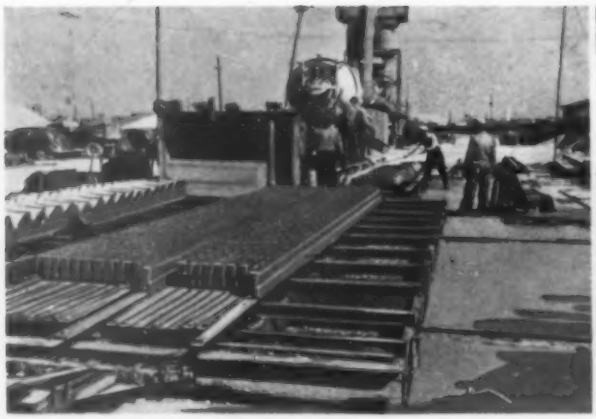
Greater Strength Through Scientific Control

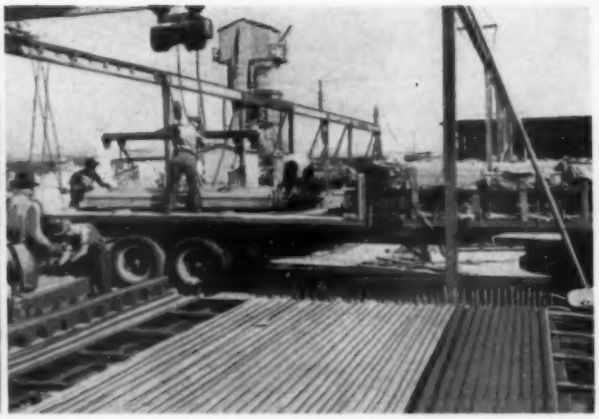
The principles involved were developed, in part, to meet strength specifications, by the use of scientific methods. A 2000-p.s.i. designed concrete will never be less than 15 percent over that figure. Every batch will come within a percent or so of the others, and any engineer has the privilege of testing any load of concrete whenever he wants.

The plant is central-mix with a 3-cu. yd. 84S Rex mixer that handles up to 3½-cu. yd. Aggregates used are crushed, unwashed trap rock produced in the company's quarry and bank sand also produced by the company. They are trucked to the plant in rear-dump trucks, and are elevated into overhead bins by belt conveyors, one transferring to a second one in the reverse direction. Capacity in storage is 140-tons total of crushed stone in four compartments of a Butler steel bin and 70-tons of sand in two compartments. Sizes of stone held in storage are 1¼- to 1-in., 1- to ¾-in., ¾- to ½-in. and minus ½-in., which are batched separately for certain concrete mixes or are accurately proportioned in others. Stone or sand

(Continued on page 69)

Left: Mixer truck receiving its load at the batching plant. Right: Control room of batching plant, levers to the left and four-beam scale for weighing. Note weights on counterpoise to compensate for moisture in sand when weighing sand





Left: Joists and stringers on curing docks with production line in the background. Right: Overhead crane and hoist makes truck loading an easy job

Two Men and An Idea

Precast concrete joists, stairs, stringers, sills, beams and slabs made by new production method

TWO MEN hit upon a new idea in concrete construction methods and proceeded to build and operate a plant which has turned out a tremendous quantity of precast concrete joists, purlins, beams, slabs, walls, stairs, sills, piling and other special units to meet the demand. C. D. Wailes, a civil and structural engineer, is known to many in the industry through his 6½ years of service as district structural engineer for the Portland Cement Association. Fred J. Bageman has had extensive experience as a building contractor, and developed much of the special machinery and equipment used in the plant and on the job. A plant was built on a two-acre site in Los Angeles, taking over the concrete products equipment of the Fabriform Company and all the concrete products machinery of Graham Bros., consolidating it all, along with other new machinery, at the new plant.

Precast concrete sections are made to specifications prepared by the architect or structural engineer in coöperation with a Wailes-Bageman representative. Manufacturing equipment is designed to permit mass production at high speed. Prefabricated sections are produced ready to install the day after manufacture, through the use of laboratory controlled concrete mixtures and num-

To the left: Placing precast concrete roof purlins and girders. To the right: View of structural concrete framework

JAEGERS DO what others merely claim

CHARGE, MIX and DISCHARGE FASTER THAN ANY OTHER TRUCK MIXER—
We can PROVE IT!
HIGH DUMP
2 TO 5 YD. SIZES
PRODUCE HIGHER STRENGTH CONCRETE
by reason of JAEGER'S exclusive END-TO-END DUAL-MIX with THROW-BACK BLADES
We can PROVE IT!
LOW CHARGE
TO 8 YD. SIZES

Combination Top or End Loader — to meet conditions. Only end loader that does not constrict drum opening or require moving Hopper to discharge.

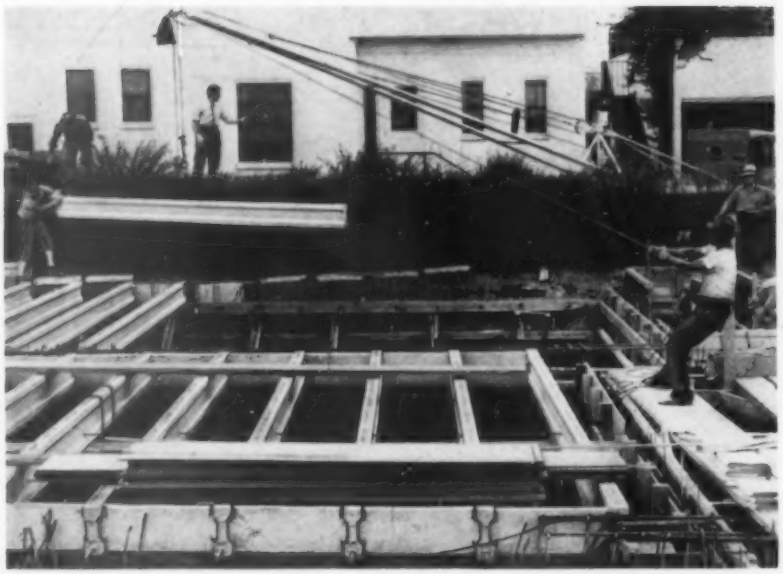
Portable 2-3 Yd. Hopper: Eliminates waiting—averages 25% more payloads. Tows behind truck mixer.

THE ONLY LINE THAT MEETS EVERY SPECIFICATION and DEMAND — Outsells All Other Makes

Jaeger, alone, offers maximum payload production of highest quality concrete in units with standard 2-Speed Transmission (Separate Engine or Vacuum-Controlled Truck Engine Drive), One-Shot Top Loading, Vacuum-Controlled High Discharge Door, End-to-End Water Sprays and Dual-Mixing in Sealed Drums. Also Combination Top or End Loaders for older or temporary plants not equipped for fast ribbon loading.

Send for complete catalog and prices — 2 to 8 Yd. sizes.

THE JAEGER MACHINE COMPANY 603 DUBLIN AVENUE COLUMBUS, OHIO



Placing 12-in. concrete joists at the Drucker Hotel job in West Los Angeles

erous new and old methods of producing dense, high strength concrete. Lightweight concrete sections, made possible through use of these methods, opens up an entire new field of application of prefabricated concrete.

Manufacturing Methods

Concrete used consists of standard portland cement, sand, and gravel. For the casting of joists, sills, stair treads, etc., pea gravel is used. For the larger sections, ¾-in. gravel is used. Water-cement ratio averages about 3½ gal. per sack. A transit mixer is charged at the bunkers nearby and all materials are weighed, and all the materials are mixed for about 10 minutes.

Structural sections, such as joists, beams, stair stringers, sheet piling, etc., are made on a large machine which measures approximately 3- x 30-ft. Pre-fabricated steel assemblies are set into the steel forms which have been previously placed in the machine. Concrete is placed in the machine by the transit mixer which works from a ramp paralleling the joist machine. As the machine is charged, very heavy compaction, by means of high frequency vibration, is applied by hammer beam action. The compaction is continued for nearly 10 minutes after which time the pallets and the joists are withdrawn from the machine on to a dock which is set exactly to the height of the machine. This action is similar to an extruding process. At this time, although the concrete is only 10 minutes old, it has been so densified and compacted that it retains its shape without side forms.

Stair treads and risers are made in one piece polished steel forms which, when pushed through a specially designed machine, are charged with concrete, compacted and struck to proper shape, and then by means of air pressure are forced out of the machine on to a loading rack. One machine making such riser and tread sections averages about 16 flights of stairs a day.

Window and door sills are made on steel forms to exact dimensions with all inserts properly located to receive steel sash, weather stripping, etc. A method of charging and compacting similar to that described for the other products is used.

Concrete in products made by this process has an average strength at three days of 3600 p.s.i., and at seven days, a strength of 5000 p.s.i. When 14 days of age the absorption under 24-hour immersion tests is approximately 2.5 percent.

Abrasion wear tests have been run by commercial testing laboratories using a special machine with a ½-in. square medium grain ribbon carborundum stone having a stroke of 3-in. and an applied load of 56 lb. The average depth of wear under 2000 strokes is .0399 in. which by comparison with other types of concrete surfaces shows these products to be of exceptional quality.

Steel is brought by crane to the assembly benches where it is rapidly assembled. For the heavier sections, some of the assemblies are tack welded. Web reinforcement is made of cold drawn wire which is shaped through punch press operations. Spacers to accurately position the steel in the forms are spot welded to the web reinforcement.

Metal forms for the concrete slabs of first floor construction are made at the concrete products plant by passing No. 26 gauge black steel sheets through special corrugating rolls. These forms remain in place so that the first floor may be very close to and yet separated from the ground.

Transportation and Installation

When manufacturing operations on a particular job are under way, properly assembled loads of units are made up at the casting yard and delivered to the location where the installation is to be made. Sections are identified and, where crane erection is contemplated for the larger pieces,

Precast concrete stairs and stringers in the Ramona housing project. Note method of partition wall framing

CEMENT DISPERSION

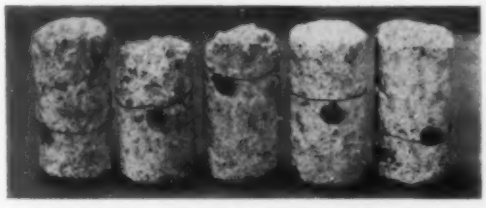
means ECONOMY..

REYNOLDS METALS, INC., SHEFFIELD, ALA.
Engr.—United Engineering & Foundry Co., Pittsburgh, Pa.
Contr.—F. H. McGraw & Co., New York City.

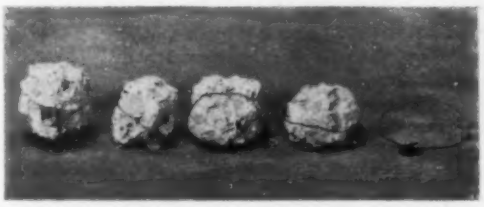
ECONOMY — *actual savings* — are now assured on all types of concrete through the use of ***Cement Dispersion*** — the most startling technologic advance in the concrete industry in a decade.

So effective is ***Cement Dispersion*** in decreasing the water required for a given consistency, that ***Pozzolith*** eliminates up to one gallon per sack of cement. Immediately the durability goes up and the cost of concrete construction goes down.

PROOF OF DURABILITY



Pozzolith concrete after 150 cycles of freezing and thawing lost only *10% by weight.*



Plain concrete after 150 cycles of freezing and thawing lost *73% by weight.*

These specimens were made of identical mixes. Dispersion of cement in Pozzolith concrete specimens permitted 15% less water (1.7 gallons less per sack of cement).

Send for the complete story on Economics of Cement Dispersion and Pozzolith.

REDUCES WATER UP TO 20%
INCREASES WORKABILITY 150%

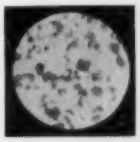
HOW CEMENT DISPERSION WORKS

Only a part of the cementitious value of the cement, whether normal portland or high early, is utilized under usual construction conditions. Investigation shows that with 28 days curing only 50% hydrates. [Anderegg and Hubbell, A.S.T.M. 29 II 554 (1929)].

Dispersed cement produces 25% to 40% higher compressive strengths.

WITHOUT POZZOLITH

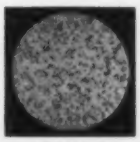
Cement particles in their normal state in water tend to gather in bunches; i.e., flocculate. Water never reaches some particles and many are only partly hydrated. This reduces the effectiveness of the cement, entraps water within the clumps, requires an excess of water for placement and often results in bleeding and segregation. See photomicrograph at right.



UNDISPERSED

WITH POZZOLITH

With Pozzolith the dispersion principle operates to drive each particle apart, thus exposing all the cement particles to the vital hydrating action. See photomicrograph at left.



DISPERSED

This dispersion makes the cement usable to its maximum efficiency since all the water is made available for lubrication of the mix and the entire surface area is exposed for hydration.

In addition to Reducing Water, Increasing Workability and Durability, the use of Pozzolith produces these further structural advantages: —

1. **High early strength — 20% or more increase in compressive strength at all ages.**
2. **Increased water-tightness — 20% or more reduction in absorption and permeability.**
3. **Reduced bleeding and segregation.**
4. **Reduced heat with minimum cement content.**

WORKABILITY AND ECONOMY

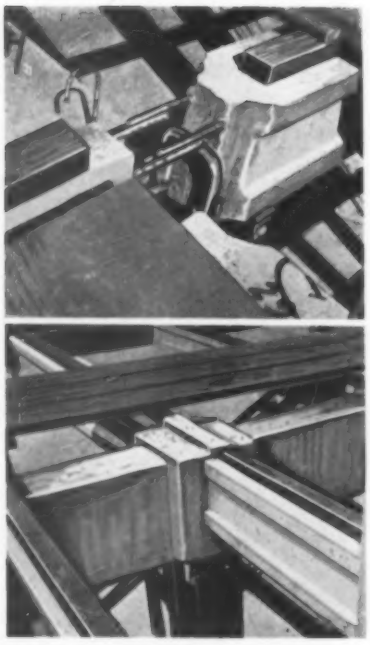
Geo. E. McIntyre, Architectural Engineer, Jefferson City, Mo., who used Pozzolith on the Missouri State Penitentiary Concrete Wall says: —

". . . the addition of Pozzolith increased the workability to such an extent that no difficulty was experienced in placing even under the most difficult circumstances. The concrete flowed perfectly, with a minimum of *placing labor* and gave a splendid appearing surface when the forms were removed.

"Pozzolith certainly lived up to your claims in this case in that it enabled us to maintain our established water cement ratio and at the same time produced the required plasticity."

THE MASTER BUILDERS CO.
CLEVELAND, OHIO TORONTO, CANADA

MASTER BUILDERS



Above: Joist construction at connecting points. Reinforcing steel is welded for continuity. Below: Connection encased in job-placed concrete

suitable means for handling are provided. By closely coordinating manufacturing, transportation and installation both speed and efficiency are obtained.

Installation of prefabricated structural sections is supervised by a competent manufacturer's representative at the job. This supervisor schedules deliveries to coordinate with the progress of the work, thus avoiding expensive interruptions and delays and eliminating idle time.

Portable equipment for manufacturing at the job site is available for use in cases where shipment of the actual prefabricated material is impractical and where quantities required justify such procedure.

Typical Jobs

The first application of the Wailes-Bageman idea of floor construction was the new Dracher Hotel in West Los Angeles, Calif., where precast joists, beams, and slabs replaced original plans for a wooden floor. One of the problems solved by this type of construction was the required fire separation between the hotel proper and the garage, which occupied the entire basement.

Another job of unusual interest was the support for a metal roof covering the Ventura Power Reservoir. The precast units used in this construction consisted of columns, girders, struts and purlins. The precast contract price was $98,475 as compared with a $144,000 estimate on monolithic concrete construction. Redwood construction would cost $73,000 with only a 30-year expectancy as compared with the permanent construction, using precast concrete units.

For the U.S.H.A. Carmelitos housing project at Long Beach, Calif., involving the construction of 600 family, low-cost housing units, 468 identical flights of stairs were required, all of which were made of precast concrete . Window and door sills also were furnished. An interesting development on this job was the production of "wrinkled" metal forms for the underside of the first floor slabs. These forms rest on shoulders cast in the joist, and remain in place after the floor is placed. This construction produces a faster job, eliminates removing forms, and avoids leaving wood under the building.

At the Harbor Hills Project, San Pedro, Calif., with 200 family units and the Ramona Housing Project, Los Angeles, with 610 family units, color treatment was used in the precast stairs and landings.

A Ready Mix Record For Small Company

BALTIMORE CONCRETE BLOCK WORKS, Baltimore, Ohio, lays claim to be a successful producer of ready mixed concrete in the smallest town in which operations of this kind are to be found.

Irene Buchanan of this company writes, "Several months ago I read in your publication where 'Ready mixed concrete pays even in a city as small as 10,000 population.' I know much has been written about ready mix gaining in popularity in smaller cities but I believe we hold some sort of a record. Our town, Baltimore, Ohio, boasts of a population of approximately 800 people. Adjoining our town is another little village of about the same size.

"Our plant, the Baltimore Concrete Block Works, has been producing ready mixed concrete since 1935 when two 1 cu. yd. mixer units were purchased to furnish ready mix on a new addition being built to the school house for the 'Twin Cities.' Ready mix has gained in importance each year until it now represents approximately one-third of our sales.

"A large part of our ready mix is sold to farmers for improvements on the farm, such as stables, milk houses, chicken houses, etc. Of course, we sold a lot for new houses especially in the past two years. We have had several large jobs but most of our business is for jobs of from one to 20 cu. yd. In addition to our ready mixed concrete we manufacture concrete blocks, state highway culvert pipe, concrete septic tanks and other concrete specialties. I might add that we have our territory 'ready-mix conscious.' Concrete around this vicinity is not just concrete but 'Ready-Mixed Concrete' from the Baltimore Concrete Block Works."

Concrete Houses for Latin America

(Continued from page 62)

In Venezuela 400 houses have been built by the Government near Puerto Cabello. A malaria and disease-infected swamp area of the past, has been changed into a neat and clean looking settlement, comparable with a southern Florida housing project. The enthusiasm and obvious success of this program is spreading fast—but the obstacles are rising in proportion.

Need More Cement Capacity Require More Capital

First and most important of all, capital is lacking to develop this important program on a large scale in most countries, capital to purchase modern American machinery and prepare the necessary aggregate supplies.

Cement is already getting scarce in Brazil and Chile. Fuel oil, to run the cement mills, is getting short in Brazil and in many other countries, which in the past had been depending solely on importation of this most vital of all raw products.

Our special interest in furthering this important development is of supreme importance in the development of inter-American relations. It is a most interesting and intriguing project and last but not least, setting all idealistic considerations aside, it is a money making opportunity unequalled in Latin America today.

To Make Concrete Block

WILLIAM HEUMADER has completed the first unit of a concrete products plant at Bellevue, Nebr., near the Burlington depot. The first building is 30- x 50-ft. He also plans to build three homes of colored concrete units.

From Sand and Gravel to Concrete Block

J. N. EINUNG, Wayne, Nebr., opened up a sand and gravel pit between Wayne and Wisner on an 80-acre site which he purchased two years ago. After meeting with considerable success in this venture he started making concrete block and brick which is called Hollostone. Both the concrete block and brick are furnished in five different colors.

Concrete Uniformity Controls

(Continued from page 63)

are diverted into either bin compartment by a turntable chute system over the bin.

Cement is handled in bulk from railroad cars, except for special varieties which are stored in sacks in a warehouse adjoining the plant. The storage system for cement is rather

Jos. V. Letize, superintendent of the ready mixed concrete plant

unusual. Directly over the cement batcher is a small bin of 2400-lb. capacity from which cement is drawn for weighing. Principal storage is a 650-bbl. steel bin which has its discharge throat on the ground level. Cement discharges from bulk cement cars into a screw conveyor which feeds into an enclosed bucket elevator to first fill the small storage hopper. The overflow, when the hopper becomes full, goes into the large bin, from which it may be withdrawn at any time to fill the small bin by the same handling equipment.

A portable Syntron electric vibrator is hung either on the car hopper or near the throat of the 650-bbl. cement bin, when needed, to stimulate flow into the screw conveyor. A similar vibrator is permanently attached to the small bin over the cement batcher.

Batching Methods

All the batching is done by a 4-beam special Toledo scale that has a quick adjustment on it for compensating for moisture in the sand, as determined by test. The operator gets his orders from the office in pounds of each material to a batch through a Tamson pneumatic system. All the mixes are designed at the office. The scale is set to the amount of any one aggregate and as the batcher is filled, the hand of the scale drops back to zero. To compensate for moisture in the sand, any one of a number of weights calibrated in terms of percentage of water contained is hung on the counterpoise when weighing the sand. This weight is taken off when weighing the water, which is the means of compensating for the sand moisture variations. Occasionally, under dry conditions, the stone is sprinkled to alleviate dust, and this moisture is compensated for on the sand counterpoise.

All the aggregates are weighed, separately, into a single Butler batcher and the cement batcher adjoins the aggregates batcher—making one unit for weighing. Water is weighed separately in another hopper and its flow is started and stopped instantaneously by a push button and electric valve circuit. All the ingredients are discharged simultaneously into the concrete mixer where the concrete is mixed three minutes before dumping into transit mixers. The operator merely steps on a pedal to discharge materials from the batcher into the mixer.

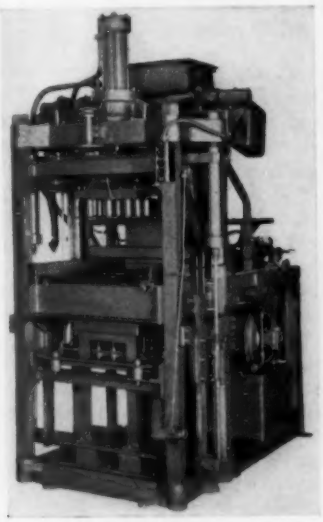
The entire plant is enclosed for winter operations. A steam boiler heats the water to 180 deg. F. in a 4000-gal. tank for winter use and the bins contain coils for the circulation of live steam.

Fleet Equipment

The delivery fleet consists of ten company-owned truck mixers and trucks owned by other ready-mixed concrete companies using the company's facilities. Eight are 3½-cu. yd. capacity and two hold 2½-cu. yd. Eight of the mixers are Jaeger, there is one Rex and the other is a Smith high dump mixer. One truck is an International and the rest White, for the large mixers, and Fords on the smaller units. Three of the large trucks have hoists which make it possible to raise the mixers for a maximum discharge height of 7-ft., when needed on the job. Wheelbarrow jobs are served by a 3-cu. yd. Jaeger portable transfer hopper which is hauled, on rubber tires, to the jobsite.

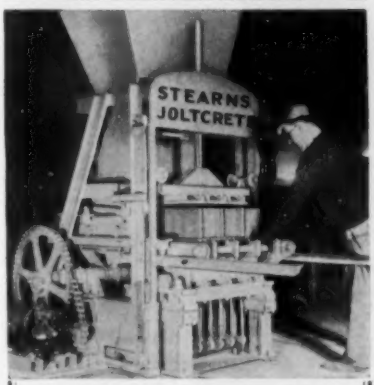
A rather novel arrangement has been devised for washing out truck mixers and disposing of the concrete which results from washing them out and getting rid of excessive concrete. A pit has been dug about 40-ft. square and 20-ft. deep with a water line paralleling one of its sides, to wash out the drums into the pit. Four 2-in. diameter pipes about 30-ft. long are inserted at a 30 deg. dip into the pit at each corner. The pipe are sealed

HYDRAULIC VIBRA-PRESS



A High Production Machine Making Blocks which are Demanded by the Contractor Endorsed by the Architect Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO



"ANCHOR"
Complete
EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.
G. M. Friel, Mgr., COLUMBUS, OHIO

at the bottoms and the other ends extend outside the pit. Twice a year, about 100 sticks of dynamite are inserted in the four pipes and the accumulation is blasted out and removed by a crane.

Handling "Second Story" Jobs

A recent development of the company is the purchase of a portable concrete plant manufactured by the Mixermobile Sales Co. The unit consists of a 2-cu. yd. mixer, a skip for charging it with aggregates from trucks and a tower and skip for placing concrete to heights up to 50-ft. The whole is carried to the job, mounted on a Ford truck.

This unit is to be used for placing concrete where elevation is a factor and has been used already as a portable central mixing plant with the skip bucket discharging into transit mixers for delivery on a short haul to certain jobs. This plant is being equipped with a heating system for the mixing water and has a capacity of 200-cu. yd. of concrete a day. The main plant has also been fitted with a by-pass chute for dumping batched materials direct into mixer drums for mixing in transit or for dry-batching aggregates into dump trucks.

W. T. Gilbert, vice-president of the company, is in charge of the ready-mixed concrete operations, and Joseph V. Letize is superintendent of the plant.

Big Ready Mix Contract

THE NEW BRIGHTON CONCRETE CO., a merger of two St. Paul, Minn., companies, has a contract for $408,970 to supply ready mixed concrete for the new small arms plant at New Brighton, Minn. The two companies in the merger are the Corning-Donahue Co. and the Guarantee Concrete Co.

J. L. SHIELY CO., St. Paul, another participant in this general contract, has erected a batching plant in New Brighton, according to latest reports.

Shuttle belt conveyor above bin distributes aggregates in five compartments. Tunnel conveyor below bins permits blending of aggregates which are then conveyed by bucket elevator to top of batching plant, to the right

Blending Aggregates for Ready Mixed Concrete

CROWE LIME & CEMENT CO., INC., Amarillo, Texas, has a simple but very efficient method of handling aggregates from railroad car to bins and from bins to concrete batching plant.

This company does not produce its own aggregates, but purchases sand and gravel from a plant about 26 miles away. Hopper type cars dump into a concrete funnel shaped pit at the bottom of which is a short 24-in. belt conveyor that carries the material to a bucket elevator, about 40-ft. centers. This elevator is located at about the center of a bin which is 20- x 20- x 100-ft., built of bridge timber with old railroad rail serving as vertical supports at 8-ft. centers. Supported above the bin on the horizontal tieing timbers is a shuttle belt conveyor, 50 ft. long, operating over a track. A reversible motor permits dumping of material from the bucket elevator to the shuttle conveyor and from thence to any of the five bin compartments for different gradations of sand and gravel. Total capacity of the bin is 25 carloads.

Below the bin is a tunnel conveyor belt which takes the aggregates to another bucket elevator that carries the material to the top of the batching plant where it is placed into any one of four bins by means of a swivel chute.

The conveying equipment, including belt conveyors, elevators, and chutes was furnished by the Link-Belt Co., and the batching plant is a product of the Butler Bin Co. Five Rex transit mix trucks of 2½-cu. yd. capacity are mounted on Reo and International truck chassis.

In addition to ready mixed concrete, the company sells a complete line of building materials and just recently went into the business of making concrete block using a concrete mix comprising volcanic ash, sand, and cement.

Officers of the company include: C. T. Crowe, president; John F. Gulde, vice-president and treasurer; and Chris Lutz, secretary, engineer, and plant superintendent.

Pipe Contract

VALLEY CONCRETE CO., Yuba City, Calif., has received a contract for 13,000 lineal feet of sewer pipe from Carson City, Nev., amounting to $8,300. This is part of the contract for a big sewer improvement and extension project.

NEW LOW COSTS! in Block Production

Nothing equals the combined VIBRATION and PACKING of

PAK-CRETE

Write TODAY for illustrated folder, details, prices. Compare for yourself.

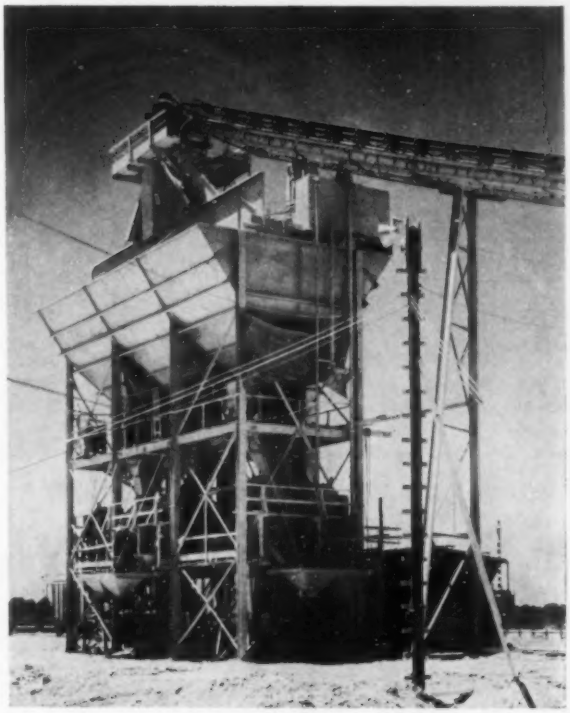
KRAMER PRODUCTS CO.
Industrial Street Peoria, Illinois

SURE CONCRETE BRICK CAN BE MADE WITHOUT PALLETS ON THE JACKSON CONCRETE BRICK MACHINE

Just Think What This Means in Dollars and cents saved in handling and upkeep as well as the cost of the pallets themselves.

Investigate today the most efficient and up to date concrete brick making equipment on the market.

JACKSON & CHURCH CO.
SAGINAW, MICH.



This type of plant has proved highly successful in such work as drydock construction. Able to produce concrete at record speeds, this plant is constructed to the high Butler standards that insure against delays and breakdowns.

BUILDING FOR NATIONAL DEFENSE

Today everywhere construction is progressing at a feverish pace. Cantonments, air bases, drydocks, factories, are being built with a speed never before approached. And behind the vast majority of these record-breaking projects, you will find Butler concrete plants. Their dependability insures against costly breakdowns and delays, their modern design enables them to deliver concrete at unbelievable speed, and their efficiency provides greater capacity at less cost per yard. It is little wonder that progressive constructors everywhere are turning to Butler to solve their plant problems.

Whether your plant is to be large or small, 50 yards per hour or 500, consult us about your problem. Ask for full information.

Butler Bin Company
WAUKESHA, WISCONSIN

QUINN PIPE FORMS

HAND or WET PROCESS

Make concrete pipe on the job with Quinn Pipe Forms. They can be handled by less experienced labor and produce uniform concrete pipe of highest quality. Quinn Pipe Forms make pipe conforming to A. S. T. M. requirements as to wall thickness and other standards.

Quinn Heavy Duty Pipe Forms are built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length. Backed by over 30 years of service in the hands of contractors, municipal departments and pipe manufacturers.

HEAVY DUTY PIPE FORMS

Our Heavy Duty type with Adjustable Locks is shown above. Quinn Heavy Duty Forms are also available with a new wedge-type lock.

MEDIUM DUTY PIPE FORMS

Meet the demand for low cost equipment that produces a uniform quality of pipe in smaller amounts. For making pipe 12 to 60 inches in diameter—any length.

WRITE TODAY

Get complete information on prices and Special Construction Features of Quinn Pipe Forms. Give us size of job for estimate on your pipe form needs.

Also manufacturers of Quinn Concrete Pipe Machines for making pipe by machine process.

QUINN WIRE & IRON WORKS 1603 12th ST. BOONE, IA.

"Here's A Hot One"

No one ever bought Commercial Pallets the second time—unless he had orders for more blocks than he could handle on the Commercial Pallets he already was using. The reason they do not buy them the second time is because they do not need to. The original purchase of steel, Close-Clearance Pallets lasts a life-time. You do not lose them by breakage, bending, cracking, warping, or any of the many other things that happen to wood, cast-iron or malleable pallets; and besides that they are all cored, easy to handle and light in weight.

Buy and be convinced of these facts

The COMMERCIAL SHEARING & STAMPING COMPANY
YOUNGSTOWN, OHIO.

Discussion leaders at the meeting. Left to right: John J. Porter, president, North American Cement Corp.; Bernard L. McNulty, president, Marblehead Lime Co.; R. A. Dittmar, chairman; and Jos. S. Young, president, Lehigh Portland Cement Co.

Training New Employes and Old Employes For New Jobs

Panel type discussions draw out interesting plant experience at sessions of Cement and Quarry Section, National Safety Congress

A SPLENDID TURNOUT of operating men engaged in an interesting and instructive discussion of safety and personnel problems at two sessions of the National Safety Congress in Chicago, October 8 and 9. With expansion of industry and new men coming into organizations and older men taking new jobs, problems of accident prevention are becoming more acute.

Report of Chairman

R. A. DITTMAR, general chairman (plant manager Universal Atlas Cement Co., Hudson, N. Y.) in his annual report said 12 new members had been added to the Cement and Quarry Section of the National Safety Council, bringing the total membership to 153.

R. J. REIGELUTH, representing the executive committee of the National Safety Council, the chairman reported, has been requested to negotiate the final approval of the proposed Safety Code for the quarry industry, now being considered by the American Standards Association, as it has been revised by the Cement and Quarry Section. J. R. BOYD, administrative director, National Crushed Stone Association, is chairman of a special committee in charge of the preparation of the proposed code.

Accident Experience

IVAN F. LEGORE, safety engineer, Portland Cement Association, with the aid of charts, presented a statistical story of the accident record of the quarry industry. Salient points were: That during the years of the depression employment techniques and training methods for new employes had been allowed to get a bit rusty; little attention was paid to the worker transferred from one job to another. In the main, he said, organizations that promptly rallied all their forces and experience to solve the problems of increased employment and stepped-up activity had met the test successfully. Organizations which moved tardily suffered adverse safety records, for the most part.

Ivan F. Le Gore, safety engineer, Portland Cement Association

Mr. LeGore said that it is hard to believe that after almost 30 years of campaigning for safety, many executives, supervisors and workmen still do not know or do not believe that accidents can be prevented, but that seems to be the case.

Reviewing the records of the important quarrying industries, Mr. Le Gore said, that according to statistics of the National Crushed Stone Association safety contest, in 1940, while man-hours worked increased only slightly, accident frequency increased 44 percent over 1939. Severity of accidents, however, decreased 15 percent. In the National Lime Association safety contest figures showed 14 percent more man-hours, 22 percent increase in accident frequency, 77 percent increase in accident severity.

In the portland cement industry, with the industry's 1941 figures available, production was up 30 percent, accident frequency increased 25 percent, accident severity was slightly greater than in 1940. The inadequacy of attention and training given newly employed men was indicated by the records of 1939, 1940 and the first 8 months of 1941. In 1939, some 10 percent of the men injured had less than six months' service with their companies; in 1940, it was 15 percent, and for the first 8 months of 1941 it had risen to 19 percent—four times the figure in 1938. In 1939, of 6 fatalities in the cement industry none occurred to men less than 35 years of age having less than 10 years' service; in 1940

Distinguished members, guests, and speaker at the Safety Congress luncheon, Cement and Quarry Section. Left to right: R. A. Dittmar, chairman of the section and superintendent of Hudson, N. Y. plant, Universal Atlas Cement Co.; Chas. Copeland Smith, guest speaker; Frank T. Sheets, president, P.C.A., Col. John Stillwell, president National Safety Council; and Jos. S. Young, president, Lehigh Portland Cement Co.

two of the men killed had less than six months' service, and four were between 25 and 35 years of age; in 8 months of 1941 two of the men killed had less than six months' service, and one had been transferred to a new job less than six months before the accident. Four of the men killed were under 35 years of age.

Faulty attitude toward safety prevention is the greatest single factor as a cause for accidents—failure for one reason or another to take precautions. The following calendar of causes was very interesting:

January—Unsafe dress, guarding.

February — Housekeeping, lack of knowledge and skill.

March—Attitude, procedure, unsafe dress, guarding.

April—Attitude, procedure, unsafe dress.

May—Lack of knowledge or skill, procedure.

June—Lack of knowledge or skill, housekeeping.

July—Lack of knowledge or skill, guarding.

August — Defective agencies, procedure.

September—Defective agencies, unsafe dress.

October—Attitude, lack of knowledge or skill.

November — Housekeeping, unsafe dress.

December — Attitude procedure, housekeeping.

Panel Discussions

The most interesting sessions were not recorded and can not be adequately reported, because they were impromptu discussions, questions and answers. The general subjects were (1) How to get and keep safety interest; (2) how to reach the man on the job.

For the first of these AUSTIN B. COX, director of industrial relations, Pennsylvania-Dixie Cement Corp., Nazareth, Penn., acted as chairman, and EDWARD GUSTAFSON, repairman, Petoskey Portland Cement Co., Petoskey, Mich., F. L. MAUS, safety director, Alpha Portland Cement Co., Easton, Penn., and W. B. RUSSELL, assistant secretary, Peerless Portland Cement Corp., Detroit, Mich., composed the panel and answered questions.

For the second discussion P. N. BUSHNELL, manager, safety and personnel department, Missouri Portland Cement Co., St. Louis, Mo., acted as chairman, and CLAUDE L. BAYLOR, personnel director, Louisville Cement Co., Speed, Ind., F. J. BUFFINGTON, safety engineer, New York Trap Rock Co., New York City, and M. P. GREER, safety engineer, Marquette Cement Manufacturing Co., Cape Girardeau, Mo., served as the panel.

Some of the points brought out were: Top management is not losing interest but getting farther away from the lower ranks of workers (probably because their time is taken up with problems of existing under present national conditions); workmen are thinking less about safety, having more outside interests (with more money to spend); needed is more frankness and individual attention; try to give the workman a better understanding of the psychology of accident prevention.

Methods of educating the new man to the job or educating an old employee to a new job were described. The Louisville Cement Co. assigns all new men to one particular foreman, who is especially fitted to break them in, and to size up the ability and capacity of the new man. From there the new man is assigned to the job he is best suited to. The Marquette Cement Manufacturing Co. has a special method of instructing men assigned to new jobs, with a follow-up system based on card records.

The second day's session was given over to top executives who gave their side of the safety problem. With BERNARD L. MCNULTY, president, Marblehead Lime Co., Chicago, presiding, JOHN J. PORTER, president, North American Cement Corp., New York City, and Jos. S. YOUNG, president, Lehigh Portland Cement Co., Allentown, Penn., were participants.

Executives' Day

MR. MCNULTY reviewed the reasons for his own personal interest in accident prevention. He recalled how his company in 1934 had 71 lost-time accidents, 41 of them at the Hannibal, Mo., plant. These represented 6320 lost man-hours. And at the end of the year the insurance company informed him that the record did not justify renewing the coverage, but it would continue to do so for old times' sake. He got busy, and since then has established an enviable record—in 1940 only 6 lost-time accidents in all 6 plants. Today, one plant has a record of 1516 days without a lost-time accident and three plants have gone over 1000 days. He gave plenty of good and sufficient reasons why executives should take a very active interest in safety.

MR. PORTER stressed the necessity for strong personal leadership, which only the executives' active participation can give an organization. The following paragraphs are worthy of constant reference, coming from a man who every one knows does practice what he preaches:

"Leadership in safety work must consist of a great deal more than

mittees, and know at first-hand the procedure of selection, placement and training. He must practice what he preaches and never fool himself into believing that he has done his part when he has placed a suggestion box where employes can find it. If safety is merely a side issue, a half-hearted experiment in the president's office, the supervisors and employes will have exactly this same attitude toward safety in their own work practices.

"One of the fundamental principles upon which the safety program of the portland cement industry is based is that proper attitude toward safety means *always put safety first without exception or compromise*. The company executive should overlook no opportunity to insist upon this and he should make a habit of inquiring about accident prevention early in the consideration of every operating and engineering problem that comes to his attention."

Mr. Porter then described in detail how the busy executive could still find time and opportunity to take an active interest in safety.

MR. YOUNG stressed the value of personal contacts so far as possible—relatively simple in a small concern, very difficult in a large one. For the latter he found the safety celebrations, both company affairs and the P. C. A. ones, of great value in "rubbing elbows" with the rank and file of employes. He said: "It is only on such occasions that the mill men have a chance to see what kind of a guy is heading up the company."

But, said Mr. Young, "over and above the many direct and indirect approaches, it is my candid opinion that the men are most influenced by tangible proof of executive interest in their own welfare. All the assuring words and all the fine phrased letters will fall flat if conditions around the plant are not all they should be. A worker has the right to expect fair treatment and decent working conditions. Lacking these he is bound to be dissatisfied. And a disgruntled employee is not fit for any work, particularly dangerous work."

He said he appreciated that such improvements cost money. "However," said Mr. Young, "whether the appropriation for this purpose be great or small, it will conclusively prove to the men in the plant that the company not only talks about their welfare, but actually is trying to do something about it." The Lehigh company, he said, had spent in the neighborhood of half a million dollars in an effort to improve general working conditions in and around the plants, which could not possibly be justified as improvements to lower costs; but that nevertheless there were dividends of goodwill.

Election

The following officers were elected for the ensuing year:

General Chairman, W. M. Powell, Medusa Portland Cement Co., Cleveland, Ohio; **Vice-Chairmen**, H. F. Yotter, General Crushed Stone Co., Easton, Pa., David Adam, Lawrence Portland Cement Co., Northampton, Pa.; **Secretary**, A. J. R. Curtis, Portland Cement Association, Chicago; **News Letter Editor**, Jack Dempster, Canada Cement Co., Ltd., Montreal, P. Q., Canada; **Engineering Committee Chairman**, J. Norvig, Pennsylvania-Dixie Cement Corp., Nazareth, Pa.; **Membership Committee Chairman**, F. L. Maus, Alpha Portland Cement Co., Easton, Pa.; **Program Committee Chairman**, L. P. Warner, Jr., Warner Co., Philadelphia, Pa.; **Publicity Committee Chairman**, P. N. Bushnell, Missouri Portland Cement Co., St. Louis, Mo.; **Statistics Committee Chairman**, W. W. Adams, U. S. Bureau of Mines, Washington, D. C.; **Members at Large**: E. D. Barry, Universal Atlas Cement Co., New York, N. Y.; J. R. Boyd, National Crushed Stone Association, Washington, D. C.; F. J. Buffington, New York Trap Rock Corp., New York City; A. B. Cox, Pennsylvania-Dixie Cement Corp., Nazareth, Pa.; R. A. Dittmar, Universal Atlas Cement Co., Hudson, N. Y.; O. M. Graves, General Crushed Stone Co., Easton, Pa.; J. J. Kelly, Marquette Cement Manufacturing Co., LaSalle, Ill.; Col. H. A. Reninger, Lehigh Portland Cement Co., Allentown, Pa.; S. W. Stauffer, National Lime Association, Washington, D. C.; A. L. Worthen, New Haven Trap Rock Co., New Haven, Conn.

A Safety Letter That Strikes Home

W. L. MATTHES, superintendent of Alpha Portland Cement Co., plant at Manheim, W. Va., sent out the following Safety Letter which simmers down the subject of safety to the individual workman so that he feels his own personal responsibility to himself, his fellow worker, and his family. The safety program of every company must constantly rekindle personal interest or it is doomed to failure. The letter follows:

ARE YOU REALLY INTERESTED IN SAFETY?

Some Questions and Answers

Question No. 1: Did you ever know a workman who **actually** didn't care whether or not he got hurt?

Question No. 2: Did you ever know a foreman who **really** didn't gave a darn whether or not the men working for him got hurt?

Question No. 3: Did you ever know a factory superintendent who **deliberately** managed men in such a way as to make his job twice as hard as it should be?

You would probably have some difficulty in remembering anybody who fits into any one of the above three classifications. It is no more characteristic of human nature to want to conduct itself in any one of these three ways than it is to want to chop off a foot.

Now, let's write these three questions a bit differently:

Question No. 1: Did you ever know a workman who **acted as** though he didn't care whether or not he got hurt?

Question No. 2: Did you ever know a foreman who **unthinkingly** gave his men the impression that he didn't give a darn whether or not they got hurt?

Question No. 3: Did you ever know a factory superintendent who **shortsightedly** managed men in such a way as to make his job twice as hard as it should be?

It is quite possible that you know several men who fit into each of the three classifications set forth in this second group of questions.

Let's consider question No. 1. When it appears from the way a workman does his job that he doesn't care whether or not he gets hurt, we call him careless. But the word "careless" implies that he, himself, really doesn't care whether or not he gets hurt. This just isn't true. The word "careless" describes his behavior much less accurately than does the word "thoughtless." In the vast majority of cases, such a man is not thinking rightly. With few exceptions, a blunt r e p r i m a n d alone will not straighten out his thinking. It takes plain, practical facts and explanations to bring about the kind of thinking that leads to safe conduct. Where reprimands take the place of necessary facts, ill will and an uncooperative spirit are the natural results.

What about question No. 2? Obviously it would be quite difficult to discover a foreman who has cold-bloodedly made up his mind that he doesn't care whether or not his men get hurt. But, it should be quite easy to find a foreman whose thoughtless inattention to the safety of his men has given them the definite impression that he really doesn't give a darn.

If you would like to speculate about the effects of this wrong impression upon the cooperation and respect such a foreman will receive from his men, recall the time some thoughtless driver of a car shot out of a side road right in front of your oncoming car without slowing down. You can bet you were plenty sore. And the reason was that it appeared to you that the other driver didn't give a whoop whether or not you got hurt. Think about that for a minute and you will probably conclude that a foreman couldn't possibly be a good foreman without actively demonstrating to his men that he really doesn't want them to get hurt. The burden of proof rests on him. What other way can he show his concern than by being aggressive in the practical development of safe working conditions and safe working habits within his department?

As for question No. 3, there are many ways a Superintendent might slip in discharging his prime responsibility of managing men. However, few ways are more pronounced in their subtle and undesirable effects than for him to appear to give scant attention to the safety of both foremen and workmen.

You may be sure that men place a high value not only upon their lives but also upon their fingers, toes and limbs. Particularly do they do so when they are in an environment where responsibility for their safety is not always one hundred percent their own. You may also be sure that the safety attitude of most foremen is conditioned by the attitude which they believe they see in their superintendent. Like the foreman, the superintendent must demonstrate that he does not want his men to get hurt.

So, in conclusion, get out your little black book and write this down: **It is not only twice as hard but it is almost impossible to develop a "hard hitting" manufacturing organization unless the entire supervisory group gives factual, consistent and thorough attention to the safety of men on the job.**

W. L. MATTHES, Superintendent,
Alpha Portland Cement Co.

Sand and Gravel Directors Discuss Defense Problems

THE REGULAR SEMI-ANNUAL meeting of the board of directors of the National Sand and Gravel Association at Washington, D. C., September 25 and 26, was a rather serious affair—as the candid portraits herewith testify—quite in keeping with the time and place.

The first morning session was devoted to official business with a report of the executive secretary, V. P. Ahearn, and discussion of the many obstacles to doing business at the present time. The financial report showed the Association in excellent condition, and its activities in behalf of its members are constantly broadening.

At the afternoon session three officers of the O.P.M. were present to explain the workings of the priorities division. They spoke briefly and then answered numerous questions quite satisfactorily. Later in the afternoon W. J. McGarry, manager of the Car Service Division of the Association of American Railways, discussed the possibility of transportation priorities. He gave a reassuring message on this score.

Also, on the afternoon program was Harry Kirk of the Associated Gen-

Some candid shots taken at the recent directors' meeting of the National Sand and Gravel Association. 1—Left to right: B. V. Hedrick; Anderson Dana; Bruce Shotton. 2—Robert Mitchell. 3—Joshua P. Eyre Price and Alex Foster, Jr. 4—J. Rutledge Hill and Stephen Stepanian. 5—Stanton Walker, Mrs. Sharp, V. P. Ahearn (Paul P. Bird's hand!), F. P. Spratlen, Jr., W. H. Wyckoff. 6—Cedric Gleason, laboratory assistant, explains stripping tests of aggregates. 7—Appraising the new freezing and thawing test equipment.

eral Contractors of America, who seemed convinced that there would be considerable building in 1942 notwithstanding priorities on steel and other structural materials. He believed that pressure of local political groups on Congress could not be resisted. He also thought the defense highway construction program would be quite extensive.

On the morning of the second day, Stanton Walker, director of engineering, reported at length on the research activities of the Association at the University of Maryland. At noon the directors were the guests of the University at luncheon, after which an inspection of the laboratory gave them first-hand information as to what was going on.

Particular interest was shown in the experiments to determine the cause and prevention of stripping of aggregates in asphalt pavements, and to the sonic or dynamic method of vibration to determine the soundness of concrete after freezing and thawing. The laboratory has one of the newest of these devices, which is proving very useful in research. It measures the change in the modulus of elasticity, which to a researcher of materials tells a great deal about changes in the probable strength of the specimen tested.

Registration

Those attending the sessions were:

Paul P. Bird (president), Boston Sand and Gravel Co., Boston, Mass.

Otto S. Conrades (vice-president), St. Louis Material & Supply Co., St. Louis, Mo.

H. S. Davison (secretary-treasurer), J. K. Davison & Bro., Pittsburgh, Pa.

H. N. Battjes, Grand Rapids Gravel Co., Grand Rapids, Mich.

H. P. Caldwell, Ohio River Sand Co., Louisville, Ky.

Anderson Dana, Seaboard Sand and Gravel Co., New York, N. Y.

(Continued on page 81)

Industrial Sand Association Directors Meet

Hot Springs, Va., to Be 1942 Convention Place

THE SEMI-ANNUAL meeting of the board of directors of the National Industrial Sand Association, at Chicago, Ill., October 15, was chiefly notable for a very comprehensive report on possible research activities by Hamilton Allport, chairman of the Association's research committee. This report received much commendation, as well it might, for it presented about as complete a picture of possible association activities as could be desired. The accompanying outline will show this; and a similar analysis might be made of any industry's problems.

It was not suggested that the Association embark on all these activities. Some could be better done by the individual companies. Moreover, a program anything like this would run into thousands of dollars. Some of the points brought out were that there appears to be a tendency to change sand-drying methods from the present banks of steam pipes to direct-heat dryers (rotary, etc.); that foundry sands are losing markets due to greater use of stampings and welded parts; and that less new sand per casting is now required; steel shot are to some extent replacing blasting sands; glass is being replaced for many products. On the other hand glass fibre is being made and used on an expanding scale, also glass brick and block.

The discussion of the report was directed chiefly to the point that the outline was too ambitious, and that some of the work proposed could be done better by the individual companies, and much of the research suggested was being done in users' research laboratories. Nevertheless great interest was expressed, and the Association assuredly has something to think about in the way of possible coöperative activities.

The rest of the meeting was devoted to a report on the priorities situation and other problems created by the national defense effort. L. M. Hanson, president of the Association and chairman of the meeting, said that the industry had been resurveyed and that the estimate previously made that its capacity to produce was two-and-half times present demand still held true. V. P. Ahearn, executive secretary of the Association, discussed the Washington picture in considerable detail. Then there was a round-table discussion of the labor situation, which apparently is little different from that of the industrial locality in which the plants are. There are four national labor unions attempting to organize plants in this industry, two A. F. of L. and two C. I. O. So far there has been no serious conflict between them.

Producers attending the meeting were:

Hamilton Allport, Standard Silica Co., Chicago, Ill.

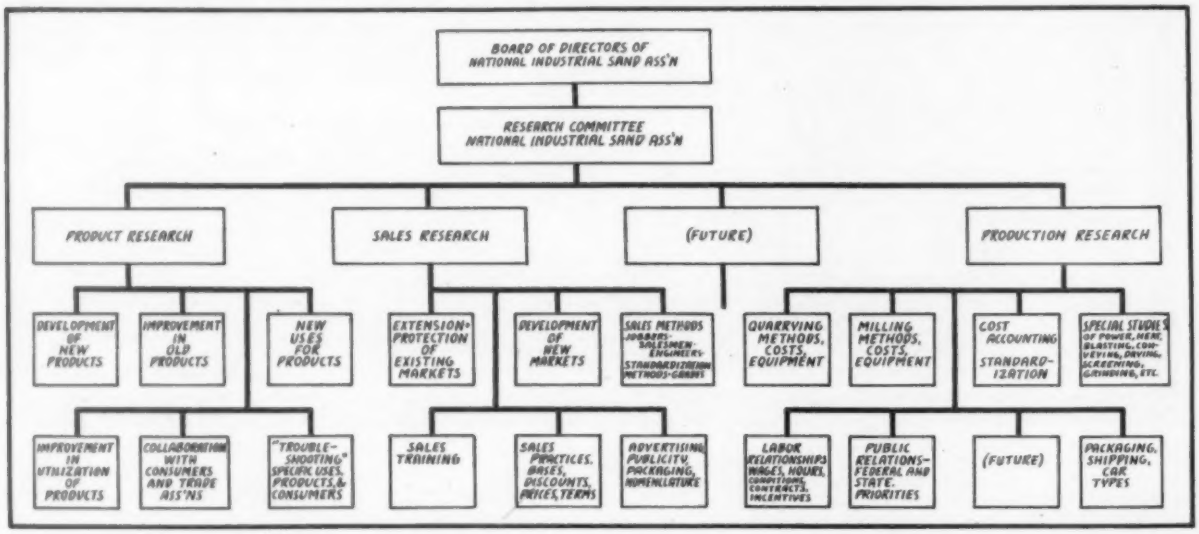
E. M. Ayers, Ayers Mineral Co., Zanesville, Ohio.

W. H. Baker, Baker Sand Co., Benton Harbor, Mich.

E. J. Beyer, Michigan Silica Co., Rockwood, Mich.

N. C. Bos, John N. Bos Sand Co., Chicago, Ill.

J. C. Cable, Minnesota Mining and Manufacturing Co., Akron, Ohio.


BOARD OF DIRECTORS OF NATIONAL INDUSTRIAL SAND ASS'N
RESEARCH COMMITTEE NATIONAL INDUSTRIAL SAND ASS'N
PRODUCT RESEARCH
SALES RESEARCH
(FUTURE)
PRODUCTION RESEARCH
DEVELOPMENT OF NEW PRODUCTS
IMPROVEMENT IN OLD PRODUCTS
NEW USES FOR PRODUCTS
EXTENSION-PROTECTION OF EXISTING MARKETS
DEVELOPMENT OF NEW MARKETS
SALES METHODS JOBBERS-SALESMEN-ENGINEERS-STANDARDIZATION METHODS-GRADES
QUARRYING METHODS, COSTS, EQUIPMENT
MILLING METHODS, COSTS, EQUIPMENT
COST ACCOUNTING STANDARDIZATION
SPECIAL STUDIES OF POWER, HEAT, BLASTING, CONVEYING, DRYING, SCREENING, GRINDING, ETC.
IMPROVEMENT IN UTILIZATION OF PRODUCTS
COLLABORATION WITH CONSUMERS AND TRADE ASS'NS
"TROUBLE-SHOOTING" SPECIFIC USES, PRODUCTS, & CONSUMERS
SALES TRAINING
SALES PRACTICES, SALES, DISCOUNTS, PRICES, TERMS
ADVERTISING PUBLICITY PACKAGING, NOMENCLATURE
LABOR RELATIONSHIPS WAGES, HOURS, CONDITIONS, CONTRACTS, INCENTIVES
PUBLIC RELATIONS-FEDERAL AND STATE. PRIORITIES
(FUTURE)
PACKAGING, SHIPPING, CAR TYPES

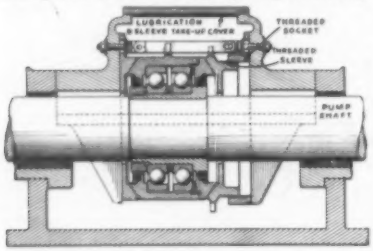
Smiling countenances at the recent National Industrial Sand Association directors' meeting reflect good business. (1)—Tom H. Hardy and Harry Hardy; (2)—Ralph Stevens, John D. Croneweth, and D. R. Martin; (3) Stanton Walker, deep in his notes; (4) J. C. Cable and John D. Croneweth; (5)—V. P. Ahearn and President L. M. Hansen; (6)—P. W. Palmer, Wm. B. Hughes, N. C. Bos, and W. W. Muhlitner; (7)—H. Allport and A. N. Farmer; (8)—E. O. Schneider, James M. Strouss, and Ralph Stevens; (9)—R. G. Hay and E. J. Beyer

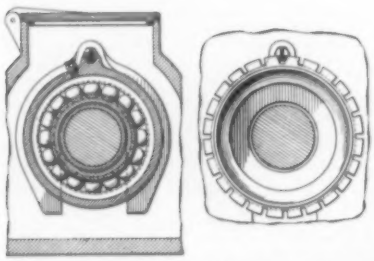
John D. Cronenweth, Great Lakes Foundry Sand Co., Detroit, Mich.
A. N. Farmer, Sand Products Corp., Cleveland, Ohio.
Sterling Farmer, Sand Products Corp., Cleveland, Ohio.
L. M. Hansen, Industrial Silica Corp., Youngstown, Ohio.
C. M. Hardy, Hougland & Hardy, Evansville, Ind.
Harry Hardy, Hardy Sand Co., Evansville, Ind.
Tom H. Hardy, Hardy Sand Co., Evansville, Ind.
R. G. Hay, Ayers Mineral Co., Zanesville, Ohio.
Wm. B. Hughes, John N. Bos Sand Co., Chicago, Ill.
B. Lorentzen, Minnesota Mining & Manufacturing Co., St. Paul, Minn.
P. S. McDougall, Ottawa Silica Co., Ottawa, Ill.
D. R. Martin, Standard Silica Corp., Ottawa, Ill.
J. J. Meaty, Oneida Lake Sand Mines, Cleveland, N. Y.
W. W. Muhlitner, Great Lakes Foundry Sand Co., Detroit, Mich.
P. W. Palmer, Browntown Silica Co., Browntown, Wis.
John Putnam, National Silica Co., Oregon, Ill.
E. O. Schneider, Ottawa Silica Co., Ottawa, Ill.
Ralph T. Stevens, Cape May Sand Co., Cape May, N. J.
James M. Strouss, Deckers Creek Sand Co., Morgantown, W. Va.
Geo. A. Thornton, Ottawa Silica Co., Ottawa, Ill.
A. Warsaw, Wedron Silica Co., Chicago, Ill.
W. J. Woods, Pennsylvania Glass Sand Co., Lewistown, Penn.

NEW MACHINERY * NEW EQUIPMENT

Simplified Bearing for Dredge Pumps

AMERICAN MANGANESE STEEL DIVISION of The American Brake Shoe & Foundry Co., Chicago Heights, Ill., has patented a dredge pump bearing





Construction and installation details of pump bearing which is easily adjusted and aligned

which simplifies adjustment and alignment of the bearings.

The aligning feature is provided by the spherical surfaces on the outer cartridge faces, and the adjustment is made by means of the threaded sleeve and socket arrangement. This sleeve is readily accessible through an opening with a hinged cover and is turned to tighten or loosen it with a spanner wrench or screw driver. The unit is lubricated separately from the sleeves, and is not subject to contamination from the oil which may come through the sleeve bearings.

Air-Controlled Shovel

THE OSGOOD CO., Marion, Ohio, has announced its type 70, air-controlled shovel. This recently developed unit is rated as a 1¼-cu. yd. shovel or a 15-ton crane, and it can be adapted to perform the duties of a shovel, dragline, clamshell, crane, or pile driver.

It is controlled throughout by air, except the hoist drum brakes. Due to air control, the type 70 has the ability to lower heavy loads against the friction of the operating machinery and the compression of the engine. The main power clutch may be thrown out, and the hoisting clutch set by air, allowing the load to be backed down through the gears. This eases the strain on the brake.

Twin disc clutches control the swing, travel, and retract motions. An independent travel mechanism and independent boom hoist also may be supplied, the former being controlled by a single twin disc clutch and the latter by two twin disc clutches.

The deck is of unit cast steel construction to lessen vibration and reduce the number of parts. The shovel may be obtained with a crawler

Air-controlled shovel has upper body centered on the revolving base by a gudgeon or pintle, revolving on conical type rollers

mounting or as an Osgood Mobilcrane with pneumatic tired wheel mounting. It may be steered in any direction, without stopping the forward motion of the machine. Air operation of the steering clutches sets the brake at the same time it disengages the clutch.

Correction

ON PAGE 37 of the October issue of ROCK PRODUCTS, in the article, "Permanente Is Now World's Largest Cement Plant," referring to the grinding of clay, it was stated that a "Pennsylvania hammer mill" was used. This unit is not a hammer mill but is the Pennsylvania Reversible Impactor. As the name implies, the Impactor makes use of the principle of reduction by dynamic impact. These units differ from hammer mills in that they are cageless and depend on impact-batting the feed in mid-air, projecting it head-on against a series of "anvils." The finer classifications are swept out by the air stream and the larger pieces again rebound into the beater circle.

Portable Crane and Hoist

DIAMOND IRON WORKS, INC., Minneapolis, Minn., has developed what they have called the Porta Crane which comes in three different models, A-40, B-40, and C-40.

Model A-40 is an all-purpose crane to work with crawler type tractor for power. With the addition of a manually operated hoist, the unit may be used for dragline and clamshell work or pile-driving. With a 75 deg. angle of boom, using a 20-ft. boom, the radius of load is 5.5-ft., the clearance of lifting block hook is 18 ft., and a 3000-lb. counterweight is required to support a 5-ton load. The overall height of mast with level tongue is 7.7-ft.; axle width, with dual 7:50 tires, is 8 ft., length of tongue from axle to end of hitch is 15 ft., and the approximate weight of the entire assembled unit is 3000 lb.

Model B-40 is a manually operated and controlled crane which can be used without dependence on a power unit for power. It has two hand-operated hoisting units attached to the crane.

Model C-40 is identical in construction to the models A-40 and B-40, but it is equipped with a small

Crane designed for operation by an air-cooled engine. A one, two or three-part hoist line can be used

air-cooled engine mounted on a frame of the crane driving an oscillating countershaft through V-belts. The engine is equipped with a governor, speed reduction unit and clutch.

Flexible Air Hose

THE B. F. GOODRICH CO., Akron, Ohio, has announced a lightweight air hose which is said to be so flexible

that a ½-in. size can be bent to a three-inch radius without collapsing or cutting off the air supply.

This type of hose may be obtained in ½ and ¾-in. sizes. It is of two-braid construction, and is designed to withstand working pressures of from 80 to 125 lb. The compound of the tube is of oil-resistant rubber with heat resisting characteristics.

Deep Hole Drilling With Wagon Drill

CHICAGO PNEUMATIC TOOL CO., New York, N. Y., has designed the G-500 wagon drill for deep hole drilling, up to 40 ft. This drill is said to be particularly adapted to rock drilling where steel changes in excess of 36 in. are practicable and large diameter holes are effective.

Designed with a tubular steel base, it may be readily converted from skid to wheel mounting. Drilling time is increased considerably as it may be quickly moved from hole to hole when the rig is wheel-mounted. Feeding the drill to the work is by gravity, due to the weight of the drill with mounting slide and adjustable weights; raising is by means of a hoist (air or hand).

Operated by a hand crank, the tilting tower permits quick and easy adjustment from 25 deg. either side of vertical, in addition a lateral adjustment of 7½ deg. either side of vertical facilitates angle drilling and compensates for rough and sloping surfaces. A locking device holds the tower in any desired position. The

Wheel-mounted wagon drill

rear wheels of the G-500 may be quickly and easily turned at right angles for line drilling or broaching.

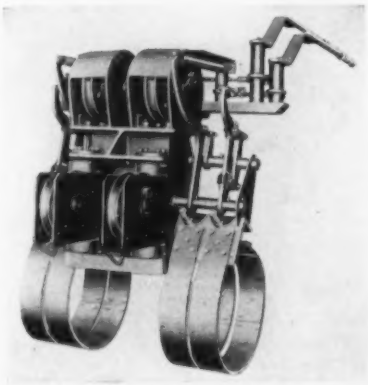
V-Sheaves and Pulleys

THERMOID RUBBER, Division of Thermoid Co., Trenton, N. J., has announced that in addition to its line of of V-belts it is now offering a complete line of V-sheaves and pulleys. This addition makes it possible for Thermoid distributors to offer complete V-belt drive service, and equips them to engineer and install V-belt drives from ¼-hp. to 1000-hp.

Improved Hoist Controls

THE BUCKEYE TRACTION DITCHER CO., Findlay, Ohio, has improved the design of the control levers and linkage on Buckeye Model HD (heavy duty) power control units for Allis-Chalmers, Caterpillar and Cletrac tractors.

Changes include the relocation of the horizontal control levers which are placed within easier reach of the operator, and the fair lead swivel sheaves have been lowered, thus bringing the direct line pull closer to



Power control unit for tractors has improved leverage

the tractor drawbar, resulting in better tractor balance. Control lever and linkage assemblies are interchangeable with the older style mechanisms.

Combination Shovel, Dragline and Crane

LIMA LOCOMOTIVE WORKS, INC., Shovel and Crane Division, Lima, Ohio, has announced the new type 603, combination shovel, dragline and crane. Used as a shovel, it is equipped with a 21-ft. boom, 17-ft. dipper handle and a 1½-cu. yd. dipper. When operated as a crane, it has a maximum lifting capacity of 25 tons. Dragline capacity is variable, depending on the nature of the work. It is available with either a gasoline, Diesel, oil or electric power unit.

Large brake area is afforded by the use of clutches and brakes of large diameter. The clutches are of the inside expanding type with the housings cooled through radiation fins. Hoist clutches are equipped with vacuum power assistors operating through toggles which makes possible the raising or lowering of loads with accuracy and ease. Each major operation is independent of the other, which makes it possible to hoist,

Shovel equipped with crawlers which may be extended in length

travel, swing and raise or lower the boom simultaneously. Drums are 30 times the diameter of the cable used, based on clamshell and dragline service.

Hydraulic Packer

SYNTRON CO., Homer City, Penn., has placed on the market a new line of water-powered hydraulic packers or jolters suitable for packing light, fine, powdery materials in barrels, drums, etc.

The packer is made up of a deck plate on which the barrel, drum, carton or other container to be filled and packed, is placed and a hydraulically operated cylinder lifts the table and drops it with a sharp jolt approximately once per second. The speed of the jolts per minute as well as the overall lift are controllable by a hand valve in the water line.

It is claimed that very little water is required for operation at water

Packer operated by water pressure

pressure about 50 p.s.i., and where lower pressures only are available, a small electric motor driven pump with a closed circuit can be supplied to operate the equipment.

Getting the Most Out of Wire Rope

Ross Island Sand and Gravel Co., Portland, Ore., takes its name from the fact that the plant is located on Ross Island in the Willamette river. Gravel is secured by dredging from the river bottom and taking the material as it caves from the banks.

Two dredges are used by the company at this point, one of which is a suction type and the other, No. 4, is a clamshell. The suction dredge is not in operation at the present time, and the clamshell is carrying the whole burden. The island processing plant, though old in years, is capable of running through 150 cu. yd. per hour. Gravel is taken away by barge to large customers or by an aerial tramway approximately a quarter of a mile long across an arm of the river and up into the Boise street bunkers and batching plant, for local truck deliveries. This tramway also delivers material for railroad shipment.

Wire rope represents one of the important maintenance items in this plant, particularly because of the nature of the production and distribution by means of clamshell dredging and tramway transportation. Even that one phase of lifting the gravel from the river depths onto barges and again from the barges by clamshell up into the top bunker of the plant depends so much on the life and reliable performance of the rope that the characteristics of the various kinds has been given close study.

Otis E. Perkins is superintendent of plant and Albert Gray is dredge operator on the clamshell equipped dredge. What they have to say in regard to rope is from long, practical experience. Mr. Gray has just celebrated his 20th anniversary as dredge operator, five years being on this same No. 4 dredge. In the 20 years, he has moved 1,500,000 cu. yd. of gravel.

Dredge No. 4 is equipped with a 3½ cu. yd. clamshell bucket weighing approximately seven tons which was made to local design, using a Stockton bowl with a Williams close. It is now digging in 65 ft. of water, which is about the maximum depth that can be negotiated on a paying basis.

Both the closing and load line are of 6-19, 1-in., preformed wire rope, each line 275 ft. in length. The two-drum hoist on the dredge barge, operated by a Willamette Iron Works 11 by 13 steam donkey, is controlled from the pilot house. The dredge is equipped with a 100-ft. boom. The boom line, 450 ft. in length, and ¾ in. in diameter is 6-19, preformed. Preformed rope is also used for the swinging gear on the turntable; in this case, old ends of 1-in. load and closing lines.

As will be seen by the close-up view of the bucket, the closing line is subjected to much abuse, as it must pass over two 16-in. sheaves in addition to the 10-in. top guide sheave. Furthermore, the closing line actually lifts 65 percent of the total load of some 12 tons as the bucket is drawn up.

Practically full life is obtained from all parts of the main and closing lines in the following manner: As will be seen, by far the greatest wear on the closing line comes in that part running over the bucket sheaves. As soon as this section shows signs of weakening, about 40 to 50-ft. is cut off from the end of the line. Then, by means of cable clamps, a similar length of old main or closing line is put in its place and run to the critical point and then another piece put in. This greatly increases the length of life of the closing line as a whole. When the time does come when it is advisable to renew the whole line, it is taken off and used as "repair parts" for the next one. It does not take a lot of time to cut off an end piece and run in another with the clamps, and a lot more life is obtained from rope in handling the problem this way. Also, the dredge operator does not have to be too cautious about it and can run either main or closing line right up to the breaking point in any part. This is because there are the two lines on the bucket at all times, and if one should break the bucket could still be brought up with the other, without sending a diver down to rig tackle on it.

Preformed rope has been the standard for about two years for main and closing lines.

With preformed rope, the dredge operator has been getting approximately 55,000 cu. yd. of gravel to each closing line and 85,000 cu. yd. on each mainline, as against 40,000 cu. yd., and 70,000 cu. yd., respectively, for the rope previously used.

"In spite of the fine internal lubri-

Fig. 1: Dredge No. 4 working in Willamette river with the plant to the right. Fig. 2: Digging gravel at 65-ft. depth with a clamshell. Fig. 3: Dredge operator, Albert Gray. Fig. 4: Type of clamshell used on dredge. Fig. 5: Cover wire with gear grease every day to prevent wear on drums and sheaves. No dust or grit is present, so it works

cation already in this type of rope, still, we grease it every day, using a medium weight gear grease," reports dredge operator, Albert Gray. "This is done not to save the line, which would not need such lubrication, but to save sheave and drum wear. Some might wonder why we use gear grease, when special wire rope lubricants are recommended and users of rope are frequently warned not to use ordinary grease, waste oil, etc. The reason is that there is no dust where the dredge operates and most of the line is working in water a good share of the time anyway. What we wish to do is to make the whole line as slippery as a greased pig.

"In the case of the boom line, the first preformed we used, it gets no lubrication whatever, other than that originally in it. That 450-ft. boom line has been on nearly three years and apparently is good for at least two more."

Over at the plant, where the barges are unloaded, this operation is performed by a 200-hp. hoist having an 80-ft. lift from the barge to the plant hopper. A clamshell type of bucket is used here also, though of considerably lighter construction and having a capacity of 3 cu. yd. The closing line in this case is of preformed wire rope. About 260 ft. is actually required for this line, but it is bought in 500-ft. lengths and the excess wound on the drum. Then, as the short, fast-wearing section operating through the bucket sheaves wears out, the worn end is cut off, bringing unworn rope through the sheaves.

COMING CONVENTIONS

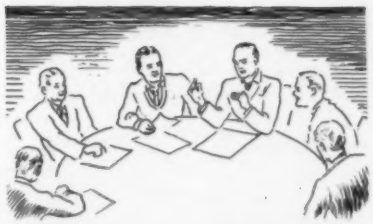
National Concrete Masonry Association, Hotel Buffalo, Buffalo, N. Y., January 12 to 14, 1942.

National Crushed Stone Association, Netherlands Plaza Hotel, Cincinnati, Ohio, February 2 to 5, 1942.

National Lime Association, The Homestead, Hot Springs, Va., May 26 to 28, 1942.

National Ready-Mixed Concrete Association, Netherlands Plaza Hotel, Cincinnati, Ohio, January 28 to 30, 1942.

National Sand and Gravel Association, Netherlands Plaza Hotel, Cincinnati, Ohio, January 28 to 30, 1942.



Laboratory Testing—Is It Practical?

By F. O. ANDEREGG*

CHOICE of this title deliberately waves a red flag in front of the man who has always prided himself on being *practical*. The word, "theory," brings to his mind the natural desire of the "Professor," whether in the university or in the New Deal, to want to try out the theories resulting from his deep cogitations. Such trials have not always been successful and a bad taste has been left for those who have suffered. Generalizing on insufficient evidence is a very human tendency and it is only by constant checking and rechecking that it can be avoided. Theories are only postulates until they have been adequately proven.

Laboratory tests all too often fail to give information relevant to a given application. If suitable test methods are available, and frequently they are not, they may be too costly or difficult to carry out. A crying need occurs to develop a practical method of determining practical facts. The trouble is that the field application may involve any one of a large number of combinations of variable factors. Very little systematic study has been given to the interplay of the factors concerned in the application of most building materials. Until the relationships involved are worked out, it is obviously difficult to set up adequate test methods. First find out what it is all about and then suitable testing specifications should logically follow.

The complexities involved in the study of a single building material may be illustrated with masonry mortar. The variations found among the sands, limes and cements used in making mortars; the differences in suction behavior of different units; unstable weather conditions; the human element in the mixing and application; the problems of design and specification; all contribute to the complications. Properties of interest in the mortar include: sand-carrying capacity and workability, strength and durability, volume change and deformability, and several others. The problem can be limited by confining the study to the materials and then selecting representative types. From the sands we might choose at first two or three. Later, perhaps, it might become desirable to run a limited number of tests on other sands. We could choose, say, five limes and mix them with portland cement, each in three proportions. Five or six masonry cements might be selected. At first the masonry units should be chosen for low, medium and high absorption, with later supplementary tests on specific units. A program planned along this line is in hand. It has already run for two years and a half and should continue much longer.

* Contributing Editor and conductor of this column devoted to "controversial" topics.

Sand and Gravel Directors

(Continued from page 76)

Alex. W. Dann, Dravo Corporation, Keystone Sand Division, Pittsburgh, Pa.

Alexander Foster, Jr., Warner Co., Philadelphia, Pa.

Floyd C. Fuller, Portsmouth Sand and Gravel Co., Portsmouth, Ohio

B. V. Hedrick, B. V. Hedrick Gravel and Sand Co., Lilesville, N. C.

J. Rutledge Hill, Gifford-Hill & Co., Dallas, Tex.

Wm. Edward Hole, American Aggregates Corp., Greenville, Ohio

Daniel J. Miller, Portland Sand and Gravel Co., Portland, Pa.

Robert Mitchell, Consolidated Rock Products Co., Los Angeles, Calif.

H. V. Owens, Eastern Rock Products, Inc., Utica, N. Y.

J. P. Eyre Price, Wyoming Sand and Stone Co., Scranton, Pa.

John Prince, Stewart Sand and Material Co., Kansas City, Mo.

Bruce G. Shotton, Hendrick Manufacturing Co., Pittsburgh, Pa.

H. N. Snyder, The Buffalo Slag Co., Buffalo, N. Y.

F. P. Spratlen, Jr., Spratlen-Brannan, Inc., Denver, Colo.

Stephen Stepanian, The Arrow Sand and Gravel Co., Columbus, Ohio

E. Guy Sutton, Neal Gravel Co., Mattoon, Ill.

Also present:

Robert Bornscheuer, J. K. Davison & Bro., Pittsburgh, Pa.

J. Fennell Berger, John A. Roebling's Sons Co., Trenton, N. J.

Claude L. Clark, Ohio Sand and Gravel Association, Columbus, Ohio

E. J. Goes, Koehring Co., Milwaukee, Wis.

Stanley A. Phillips, Pit and Quarry Publications, Chicago, Ill.

Nathan C. Rockwood, Rock Products, Chicago, Ill.

Ray V. Warren, Western Pennsylvania Sand and Gravel Association, Pittsburgh, Pa.

W. H. Wyckoff, The Merom Gravel Co., Decatur, Ill.

Stanton Walker, National Sand and Gravel Association, Washington, D. C.

V. P. Ahearn, National Sand and Gravel Association, Washington, D. C.

Cement Financial Study Shows Industry's Good Condition

FEDERAL TRADE COMMISSION has issued an "Industrial Corporation Reports" on cement manufacturing corporations (dated June 10, 1941). It is based on an analysis of the financial statistics of 17 companies for 1939. Of the $192,611,304 value of cement produced in 1939 these 17 companies accounted for $88,237,374 (about 46 percent). The average total capital employed was $200,216,161; the net income based on this capital (before deduction of interest on long-term borrowings and income taxes) was $16,320,484, or 8.2 percent. The individual rates of return on capital invested ranged from a loss of 1.2 percent to a net profit (before deductions) of 16.1 percent. The net income (after provision for income taxes) on corporate net worth, or stockholders' equity, was $12,707,707, or 6.8 percent, ranging for individual corporations from a loss of 8.5 percent to a profit of 13.1 percent. The 17 companies out of their net of $12,707,707 paid dividends of $10,160,940, or an average return of 5.4 percent to stockholders on book value (not market value) $186,843,908 for their holdings.

The 1939 operating ratios for the 14 corporations (the other three did not supply adequate data) show that the cost of the goods sold (exclusive of taxes, social security and pension fund payments, selling expenses, administrative and general office expenses, research and development expense, etc.) represented 63.5c of every dollar of sales. Of the total cost of goods sold, raw materials represented 21.4 percent; production wages and salaries, 16.2 percent; other costs and expenses (not listed under "Expenses"), 14.2 percent; depreciation, depletion and obsolescence applying to production facilities, 10.4 percent; and finished goods purchased for resale, 1.3 percent. The gross margin on sales was 36.5 percent.

The total of items listed as expenses represented 18.8 percent of the total sales. Of the total expenses, selling expenses represented 9.2 percent of total sales; advertising, 0.7 percent; administrative and general office expenses, 5.1 percent; all taxes (except income taxes and social security payments), 2.6 percent; all social security and pension fund payments, 1.0 percent (ratio here is to sales dollar and not payrolls); and research and development, 0.2 percent. After deduction of the items listed as expenses, together with the provision for uncollectible accounts of 0.2 percent, from the gross margin on sales, plus other operating revenue of 0.2 percent, there remained a net profit from manufacturing and trading of 17.7 cents from every dollar of sales.

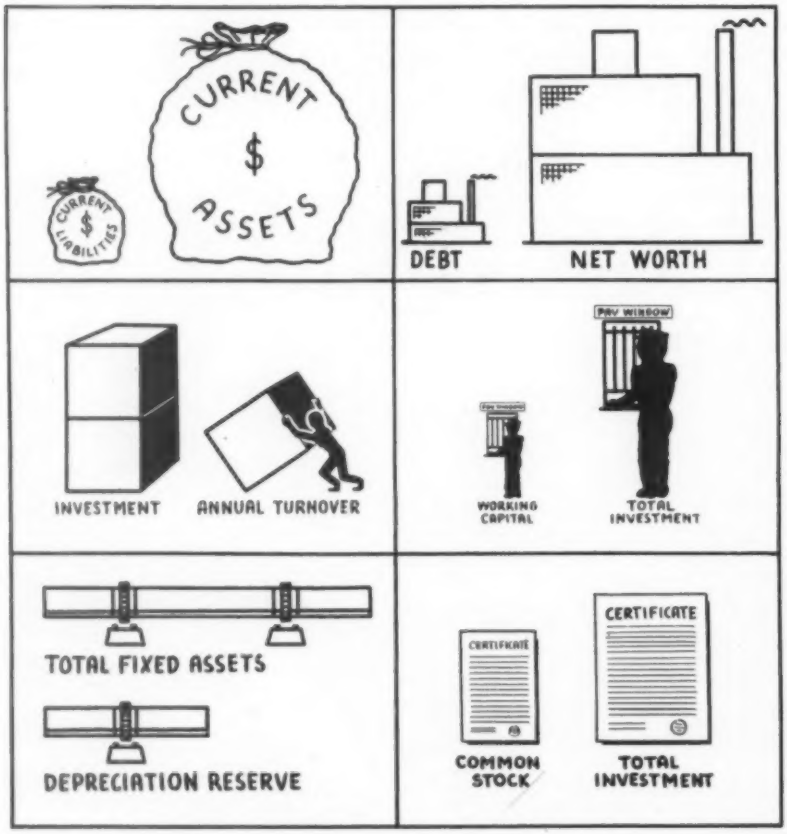
The following facts are of interest in illustrating the character of the industry:

	Items	Times
(1)	Current assets to current liabilities	8.07
(2)	Quick assets to current liabilities	4.84
(3)	Net worth to long-term and bank debt	14.63
(4)	Sales and other operating income to average investment in the cement business	0.49
(5)	Sales and other operating income to total operating outgo	1.22
(6)	Total operating outgo to average investment in the cement business	0.40
(7)	Total operating outgo (exclusive of depreciation) to the average working or circulating capital[1]	1.34
(8)	Sales to average accounts and notes receivable—trade	13.96
		Percent
(9)	Working capital to total investment	23.13
(10)	Net fixed assets to total investment	66.07
(11)	Reported appreciation (net) to total investments	1.26
(12)	Outside investments (securities, etc., outside the cement business) to total investment	10.54
(13)	Depreciation reserve to gross fixed assets	56.18
(14)	Long-term debt (less discount) to total investment	6.20
(15)	Preferred stock to total investment	11.25
(16)	Common stock to total investment	53.33
(17)	All surplus (excluding appreciation surplus) and surplus reserves to total investment	29.22

[1] Working capital consists of the total current assets—less current liabilities and marketable securities.

The total investment consists of the corporate net worth, or stockholders' equity, and the long-term borrowings.

Some of the most significant of these data are shown in the accompanying charts.



No Priorities on Cement

IT IS BELIEVED that no priorities will be established on cement, according to Standard & Poor's Corporation. Although the cement industry is now operating at the highest capacity in many years, there is still considerable mill capacity which is not being used. However, in many areas cement plants are operating at full capacity, and this condition is likely to continue for sometime.

Price-Fixing Cement Case to be Retried

RETRIAL of 18 defendants charged with conspiring to fix the price of cement in the Denver, Colo., area was set for December 1 by United States District Judge J. Foster Symes. The first trial, which lasted three weeks, was inconclusive as the jury failed to reach a verdict. Negotiations are still going on between the anti-trust division of the attorney general's office and counsel for the cement defendants on the advisability of entering a consent decree. A retrial will be eliminated if an agreement is reached on a consent decree.

To Open Quarry

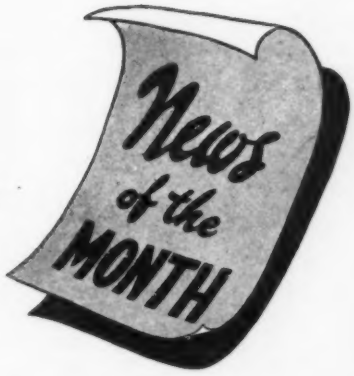
RAY C. DAVIS, formerly owner of a quarry in Union County, Ohio, has been making tests on a 172-acre tract along State Route 111 west of Toledo Edison power dam near Defiance, Ohio, to determine the desirability of opening up a quarry. He has an option on the Schneider farm. Mr. Davis is an old-time quarry operator, having been in the business for 40 years, acting as superintendent of a quarry at Marion, Ohio, and later operating his own plant near Marysville.

Construction Conference

V. P. AHEARN, executive secretary, National Sand and Gravel Association, presided at one of the sessions of the Construction Industry Conference held under the auspices of the Chamber of Commerce November 6 and 7. Allocations and Priorities was the topic of the panel discussion at which Mr. Ahearn served as chairman. Following an introductory statement by the Director of Priorities, OPM, Sullivan W. Jones, in charge of housing priorities, OPM, and John H. Martin, director of training, priorities division, OPM, led the discussion.

Ohio to Build Army Roads

OHIO is planning to concentrate on new construction and improvements to the 1300 miles of highway within the state included in the strategic network of military highways. It is expected that these projects will be given a high priority rating: Routes 20 and 40 across the state, connecting with Indiana and Pennsylvania, Route 23 from Columbus to Portsmouth, Route 25 from Toledo to Cincinnati, Route 24 from Toledo west to Indiana, Routes 42, 61 and 3 from Cleveland to Columbus, Route 22 from Cambridge to Steubenville, Routes 14 and 45 from Cleveland to East Liverpool, Route 18 from Norwalk to Youngstown, and Route 52 from Cincinnati along the Ohio river to Ironton. However, priority ratings have been meaningless as there has been difficulty getting steel.



New Highway May Require Moving Gravel Plant

WAUKESHA WASHED SAND AND GRAVEL Co. may find it necessary to seek a new location for its plant at Okauchee, Wis., to permit the rerouting of Highway 16-19. I. M. Clicquennoi, general manager, said that operations would continue at the gravel plant until the Wisconsin Highway Commission has definitely set a route. The gravel company has agreed to cooperate with the state authorities, but some question has arisen with respect to the amount to be paid the company.

Carrara Considers Expansion

CARRARA PORTLAND CEMENT CO., Reno, Nev., has temporarily suspended construction work on its new plant pending consideration of plans to increase capacity as it is said that it now has orders on hand for the next three years' production at present capacity of the equipment. Officers elected for the ensuing year are: A. M. Elizalde, president; O. J. Gallagher, vice-president; Clyde C. Sherwood, secretary; Charles A. Carlson, assistant treasurer and assistant secretary, and with John B. Lewis, Marcella Nolan, Thomas Beedy, and Emerson J. Wilson, constitute the board of directors and officers of the company.

Building Magnesium Plant

BASIC MAGNESIUM, INC., has awarded a contract to MacDonald Engineering Co., Chicago, for construction of a $3,000,000 magnesium oxide plant near Luning, Nev. The work is expected to be finished in nine months, after which 2000 tons of magnesite will be treated daily. Equipment is to include a flotation plant, calcining unit and other departments for the production of magnesium oxide, which will be shipped to the magnesium metal plant being built at Las Vegas.

Court Order Stops Sand Operation

OIL CITY SAND AND GRAVEL CO., Oil City, Penn., has been ordered to cease operation of its plant at the north end of Wyllis street and the company's dredge in the Allegheny river at Moran's Eddy. The injunction was issued by Judge Lee A. McCracken. Terms of the court order permanently restrain the company from continuing operations, except that the defendant is permitted to dispose of processed materials ready for sale. Officials of the company said that exceptions would be filed and the case appealed.

Idaho Phosphate Plant

TETON PHOSPHATE COMPANY, INC., near Montpelier, Idaho, expects to start operations in the very near future. Ralph M. Taylor, Idaho Falls, has the contract to mill the phosphate rock to 100-mesh. The plant will include a mill, scraper, dryer, and several tractors and bulldozers.

Start Up Pipe Unit

UNIVERSAL CONCRETE PIPE CO. has started operations at its new plant at Moultrie, Ga., according to an announcement by Manager Heinzman. The company expects to cast 48-in. reinforced concrete pipe for the army air base located nearby. Other sizes also will be made for this project, but the bulk of the contract will be for 48-in. pipe. Construction also has been started on a pipe plant at Decatur, Ala.

Complete Gravel Plant

SOUTHEASTERN SAND & GRAVEL CO., Union Springs, Ala., has completed a new plant at Leslie, Ala. This modern screening and washing plant is reported to have cost $40,000.

Buy Gravel Company

ROLLO W. MCCLELLAN and his son, Rollo McClellan, Jr., Costa Mesa, Calif., have purchased the sand and gravel business of E. M. Burris Co., Newport Beach, Calif. Mr. McClellan has operated the California Rock Co., Orange, Calif., for a number of years and will retain his interest in this company.

Replace Feldspar Unit

SEABOARD FELDSPAR CO. plans to build a new feldspar processing plant at Brookneal, Va., to replace the plant which burned down.

FINANCIAL NOTES

FLORIDA PORTLAND CEMENT CO., Chicago, Ill., with a plant at Tampa, Fla., had a profit of $892,582 for the nine months ended September 30, 1941, before federal taxes, as against $690,216 for the similar period in 1940.

PEERLESS CEMENT CORPORATION, Detroit, Mich., announced a net profit of $324,608 for the nine months ended September 30, 1941 which compares with $286,688 for a like period in 1940.

VIBRATION
under control
PLAT-O
by DEISTER
Vibration — always a construction bugaboo in overhead screening plants — offers no problem when grading operations are handled by Deister PLAT-O Vibrating Screens.
Specially designed, electric furnace, chrome vanadium steel supporting springs of large diameter absorb all vibrations . . . prevent their transmission to the super-structure . . . reduce to a minimum any strains on either vibrating screens or supporting members . . . prolong the efficient operating life of all screening equipment. Fully cushioned vibration is only one of 8 exclusive PLAT-O features designed to give you increased screening capacity . . . lower screening costs. The booklet "Better Sizing, Cheaper" will give you the complete story. Write for your copy today.
DEISTER MACHINE COMPANY • FT. WAYNE, INDIANA

RECENT DIVIDENDS ANNOUNCED

		1941
Arundel Corp.	$ .25	Oct. 1
Bessemer Limestone & Cem. Co. 6% pfd. (p50) (arrears)	1.50	Sept. 30
Consolidated Sand & Gravel pfd.	2.00	Oct. 15
Lehigh Portland Cem. Co.	.87½	Nov. 1
Lehigh Portland Cem. Co. pfd.	1.00	Oct. 1
Lehigh Portland Cem. Co. pfd.	1.00	Jan. 2 1942
Medusa Portland Cem. Co. common	.50	Oct. 1
Medusa Portland Cem. Co. pfd.	1.50	Oct. 1
Monolith Portland Cem. Co. 8% pfd. (p10) (arrears)	.25	Oct. 16
N. Y. Trap Rock Corp. $7 pfd. (np) (arrears)	1.75	Oct. 14
Ohio River Sand Co. 7% pfd. (p100) (arrears)	.50	Nov. 1
Pacific Portland Cem Co. 6½% pfd. (p100) (arrears)	1.00	Oct. 29
Peerless Cem. Corp. com.	.25	Oct. 3
Southern Phosphate	.15	Sept. 30
Superior Portland Cem. Co. Cl. B	.50	Oct. 28

•

ALPHA PORTLAND CEMENT CO., Easton, Penn., released the following statement of earnings for the 12 month period ended September 30:

	1941	1940
Net sales	$9,396,215	$7,167,639
Operating expenses.	6,668,973	5,434,319
Depreciation & depletion	979,803	955,814
Operating profit.	$1,747,439	$ 777,506
Net profit sale sec.	11,719	176,928
Other income	48,021	62,504
Total income	$1,807,179	$1,016,938
Income charges	31,536	23,750
Fed. income & excess profits taxes.	549,875	214,095
Net profit	$1,225,768	$ 779,093
Common divs.	955,445	639,225
Surplus	$ 270,323	$ 139,868

•

PENNSYLVANIA-DIXIE CEMENT CORP., New York, N. Y., had a net income of $1,063,727 for the 12 months ended September 30, 1941. This compares with $650,117 for the preceding period.

•

CONSOLIDATED CEMENT CORPORATION, Chicago, Ill., reported a net profit of $128,551 for the nine months ended September 30, 1941, before federal taxes, as against $118,906 for a similar period a year ago.

•

LEHIGH PORTLAND CEMENT CO., Allentown, Penn., reports a heavy demand for cement, a sharp gain over a year ago. Prices of cement are firm.

Net profit for the 12 months ended September 30, 1941, was $2,587,885, after charges and provision of $2,011,554 for estimated federal income and excess profits taxes. This compares with a net profit of $2,011,556 for the like period in 1940.

LET EAGLE SOLVE YOUR PROBLEM

Are you bothered with perplexing problems in the production of sand and gravel because it does not meet the specifications demanded for National Defense Projects and State or Federal Government? If so let Eagle Washers and Dewaterers solve them for you.

Eagle washing equipment is helping others meet these tough demands and the reason is simple—the Eagle line has been particularly designed to meet these demands as a result of our thorough knowledge of washing problems and their solutions. Our engineers are constantly designing new machines to fit the new problems.

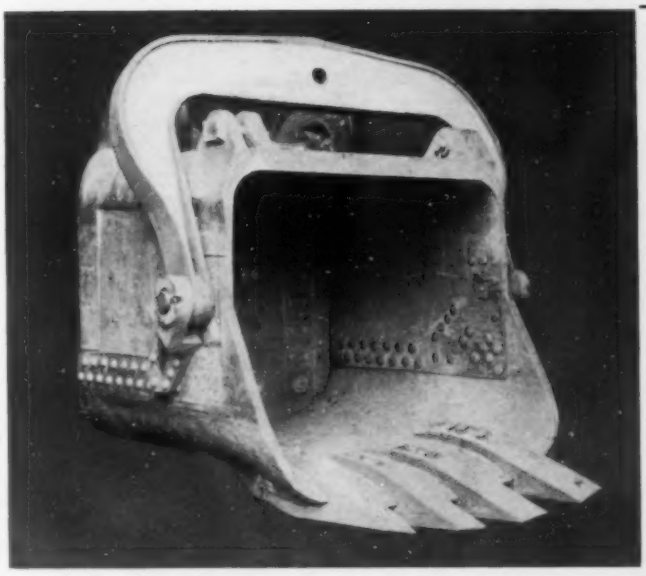
Our many years of experience in serving the sand and gravel industry has qualified us to authoritatively advise any producer who is now being confronted from day to day with new problems.

Eagle makes a complete line of soundly engineered, high quality plant equipment . . . Spiral screw washers . . . Paddle type log washers . . . Sand Tanks . . . Sand drags . . . Sand dewaterers . . . Shale removers . . . Sand and gravel crushers . . . Swintek screen nozzle ladder.

EAGLE IRON WORKS

DES MOINES IOWA

Let us show you how Eagle equipment will earn dividends for you.



MANGANESE STEEL SHOVEL PARTS FOR UNEQUALLED *Service*

Moving the earth is no boy's job. Men who know metals don't "send a boy" to do it. They equip their shovels with manganese steel. TISCO manganese steel, for maximum wear resistance and dependability. For teeth, lips, fronts, keepers, etc., which take the shock and abrasion of digging,

Specify TISCO

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REPAIR PARTS FOR:

Jaw, Gyratory & Roll Crushers
Hammer Mills & Pulverizers
Ball, Rod & Tube Mills
Shovel Dippers

Pumps
Grinding Balls
Manganese Nickel Steel Welding Products

Alnico Permanent Magnets
Railway Trackwork
Gas Cylinders
Dredges, etc.

TAYLOR-WHARTON IRON AND STEEL CO.

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PLANTS AT HIGH BRIDGE, N. J.—EASTON, PA.

BOSTON • CHICAGO • CLEVELAND • HOUSTON • NEW YORK
PHILADELPHIA • PITTSBURGH • SAN FRANCISCO • SCRANTON

Federal Contract Awards

AWARDS made by Federal governmental agencies to rock products companies for the period from September 20 to October 11 as reported by the Division of Public Contracts, Department of Labor, are as follows:

Cement

*Various Sources

Keystone Portland Cement Co., Inc., Philadelphia, Pa., WPA, $20,800

Schwartz Supply Co., Inc., New Orleans, La., WPA, $13,154

Pacific Portland Cement Co., Redwood Harbor, Calif., War, $43,290

*Nagle Lumber Co., Iowa City, Iowa, WPA, $28,405

Pacific Portland Cement Co., San Juan Bautista, Calif., War, $10,398

Sand and Gravel

†Estimated

Southeastern Sand & Gravel Co., Inc., Tallassee, Ala., War, $56,000

Carolina Sand & Gravel Co., Kathwood Siding, S. C., TVA, $63,750

†Tenn Valley Sand & Gravel Co., Sheffield, Ala., TVA, $14,000

MORE POWER..MORE PROFITS!

Compact, lighter in weight, the Murphy is a true DIESEL, providing real operating economy with simple, sturdy construction that means years of reliable performance. Generator Sets are rugged, compact, simple to operate — in every detail built for continuous heavy duty service.

Murphy Diesel engines are available in sizes 85 to 200 H. P.; generator sets 55 KW to 115 KW, A. C. or D. C.

Write for complete information.

MURPHY DIESEL COMPANY
MILWAUKEE, WISCONSIN

Walter B. Roselip, San Luis Obispo, Calif., from Southern Pacific Milling Co., San Luis Obispo, Calif., WPA, $14,500

Fitchburg Concrete Const. Co., Fitchburg, Mass., WPA, $12,960

McGrath Sand & Gravel Co., Inc., Chillicothe, Ill., WPA, $10,125

McGrath Sand & Gravel Co., Inc., Chillicothe, Ill., WPA, $26,060

Crushed Stone

†Estimated

†Birmingham Slag Co., Strawberry Plains, Tenn., TVA, $199,500

Pennington Quarry Co., Pennington, N. J., WPA, $209,613

John P Callaghan, Inc., Harrison, N. J., WPA, $13,300

Raleigh Granite Co., Raleigh, N. C., WPA, $16,284

National Stone Co., Joliet, Ill., WPA, $58,500

Grimmett Construction Co., Minco and Bethany, Okla., WPA, $36,630

Fisher Bros., Seaside, Ore., WPA, $110,500

Phosphate

American Agricultural Chem. Co., Pierce, Fla., Treas., $37,128

Coronet Phosphate Co., Coronet, Fla., Treas., $217,620

Slag

The Standard Slag Co., Warren, Ohio, WPA, $14,893.52

Concrete Pipe

Gulf Concrete Pipe Co., Inc., Houston, Texas, WPA, $14,457

Gifford-Hill Pipe Co., Dallas, Texas, WPA, $11,171.43

Ready Mixed Concrete

M. F. Hickey Co., Inc., Brooklyn, N. Y., WPA, $13,365

Faulkner Concrete Pipe Co., Jackson, Miss., WPA, $13,018.44

Federal-American Cement Tile Co., Birmingham, Ala., TVA, $13,572

O'Rourke Construction Materials Co., Chanute Field, Ill., WPA, $13,171.20

Bituminous Mixtures

J. Leopold & Co., Inc., Brooklyn, N. Y., WPA, $54,608.75

Western Paving Construction Co., Denver, Colo., WPA, $17,730

L. G. Defelice & Son, Inc., New Haven, Conn., WPA, $28,275

Jones & King, Medford, Ore., WPA, $54,000

Payne & Dolan of Wisconsin, Inc., Camp Williams, Wis., WPA, $48,657

Agricultural Limestone

Indefinite Amounts

(Agri P S & T and AAA)

*Various Sources

D. L. Walker & Co., Jackson County, Ky.

Lee Lime Corp., West Stockbridge, Mass., from Consolidated Dealers, East Chatham, N. Y.

Liberty Limestone Corp., Buchanan, Va.

Campbell Limestone Co., Gaffney, S. C.

Bertha Mineral Division, The New Jersey Zinc Co., Austinville, Va.

George Geoghegan, Bardstown, Ky.

American Limestone Co., Mascot, Tenn., from Universal Exploration Co., Jefferson City, Tenn.

Bethlehem Steel Co., Bridgeport, Pa.

Farmers Cooperative Assn., Inc., New London, Md.

Bethlehem Steel Co., Bridgeport, Pa., from Joseph Mills, New York City, N. Y.

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SHAY REPAIR PARTS

The continued efficiency of your Shay is assured when you use *genuine* FACTORY MADE Shay repair parts. These parts belong on Shays because they are made of the *proper* materials and are finished to the *original* jigs, gauges and templets.

Shay owners on the Pacific Coast can obtain *genuine* FACTORY MADE Shay repair parts direct from our warehouse in Seattle, which is in charge of our factory representatives. There, and at Lima, Ohio, a complete stock is constantly maintained ready for immediate shipment.

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LIMA LOCOMOTIVE WORKS
INCORPORATED
LIMA, OHIO
Sales Office: 60 E. 42nd St., New York, N. Y.

Dependability COUNTS!

Old Smith Tilter Customer Orders Fleet of 4 Smith-Mobiles

The Jahncke Ready-Mixed Concrete Co., New Orleans, recently purchased four Smith-Mobile Truck Mixers. Why? Because they liked the HIGH DISCHARGE — the handy FEED CHUTE — the VISIBLE MIXING feature? Yes, but primarily because of the excellent, all-around performance of the Smith Tilting Mixers which Jahncke has been using for many years.

Jahncke knew that Smith-Mobiles were designed, built and guaranteed by the same company that built the famous Big Smith Tilters . . . knew also that Smith Engineers had a reputation at stake. They wouldn't dare put out an inferior product. No doubt about it, you can buy Smith-Mobiles with confidence . . . hundreds are now in successful operation . . . so why gamble with new, untried truck mixers?

(Above) Smith 56-S Tilter installed in Jahncke plant.
(Below) Jahncke's four new No. 2 Smith-Mobiles.

The T. L. SMITH COMPANY
2989 N. 32nd St., Milwaukee, Wis.

SMITH-MOBILE *The Original High-Discharge* **TRUCK MIXER & AGITATOR**

A 3476-½H

RUGGLES-COLES
INDIRECT HEAT
DRYER

The products of combustion do not come in contact with the material being dried in the Class "XB" Dryer. The dust lost is low.

Following are some of the materials that are being dried:

Zinc Concentrates
Colemanite
Calcium Arsenate
Barium Carbonate
Asbestos Fibre
Charcoal
Coke
Carbon Dust
Loess
Pumice
Talc
English Chalk
China Clay
Kaolin
Whiting
Fullers Earth
Chromite

HARDINGE
COMPANY, INCORPORATED
YORK, PA., Main Office & Works
NEW YORK, 122 East 42nd Street
CHICAGO, 205 W. Wacker Drive
SAN FRANCISCO, 501 Howard St.
TORONTO, 200 Bay Street

On the Labor Front

BIRMINGHAM SLAG CO., Gadsden, Ala., announced that a satisfactory agreement had been reached with the Steel Workers Organizing Committee (CIO), ending the 30-day strike. The "differences" involved in the strike will be settled in meetings to be held between management and union.

•

PEERLESS CEMENT PRODUCTS CO., Charleston, W. Va., recently petitioned Circuit Judge Julian F. Bouchelle for an injunction restraining picketing at its South Side plant by members of the United Construction Workers (CIO). The union (CIO) has demanded collective bargaining rights at the plant where there is now an AFL union which claims it represents the majority of the employes. About 70 employes have been idle since the plant closed September 24. The plant has been filling defense orders for the South Charleston Naval ordnance plant and a federal housing project. Contractors have been unable to move materials by truck from the plant.

•

IT IS REPORTED that a supplemental contract has been signed by the Manitowoc Portland Cement Co., Manitowoc, Wis., for an all-union shop at the Milwaukee storage and packing plant and the cement mill. The contract, which runs to April 1, 1942, has been signed by the parent company, the Medusa Portland Cement Co., Cleveland, Ohio, with Local 34, United Cement, Lime and Gypsum Workers' International (AFL).

•

A STRIKE of union workers (AFL) at the Asheville Mica Co., followed the NLRB election held on September 10 when the vote went against the union by 83 to 69. J. Fuller Brown, secretary-treasurer of the company, is reported to have said that 40 to 50 percent of the output was used in the defense program.

Concrete Pavement Yardage

AWARDS of concrete pavement for September, 1941, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During September, 1941
Roads	2,634,534
Streets and Alleys	1,814,196
Airports	1,623,649
Total	6,072,379

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912 and March 3, 1933

Of ROCK PRODUCTS, published monthly at Chicago, Illinois, for October 1, 1941.

State of Illinois, County of Cook, ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared R. M. Ward, who, having been duly sworn according to law, deposes and says that he is the Business Manager of Rock Products and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher—Tradepress Publishing Corporation, 309 W. Jackson Blvd., Chicago, Ill.

Editor—Nathan C. Rockwood, 309 W. Jackson Blvd., Chicago, Ill.

Managing Editor—Ralph S. Torgerson, 309 W. Jackson Blvd., Chicago, Ill.

Business Manager—R. M. Ward, 309 W. Jackson Blvd., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Tradepress Publishing Corporation, 309 W. Jackson Blvd., Chicago, Ill. The stockholders of the Tradepress Publishing Corporation are John R. Thompson, 2511 Coyle Avenue, Chicago; J. L. Frazier, 2043 Orrington Ave., Evanston, Ill.; Col. J. B. Maclean, 7 Austin Terrace, Toronto, Ont., Canada; Horace T. Hunter, 120 Inglewood Drive, Toronto, Ont., Canada; H. V. Tyrrell, Willowdale Post office, Ont., Canada; The MacLean Publishing Co., Ltd., 481 University Avenue, Toronto, Ontario, Canada.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is: (This information is required from daily publications only.)

R. M. WARD,
Business Manager.

Sworn to and subscribed before me this first day of October, 1941.

(Seal) CLARA S. LYNCH.

(My commission expires Feb. 6, 1944.)

Cement Shipments Increasing

BUREAU OF MINES reports that the portland cement industry in September, 1941, produced 16,115,000 bbl., shipped 18,284,000 bbl. from the mills, and had in stock at the end of the month, 17,563,000 bbl. Production and shipments of portland cement in September, 1941, showed increases of 23.0 and 24.0 percent, respectively, as compared with September, 1940. Portland cement stocks at mills were 11.8 percent lower than a year ago.

The total production for the nine months ending September 30, 1941, amounts to 118,573,000 bbl., compared with 92,437,000 bbl. in the same period of 1940, and the total shipments for the nine months ending September 30, 1941, amounts to 124,440,000 bbl., compared with 95,975,000 bbl. in the same period of 1940.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 157 plants at the close of September, 1941, and 160 plants at the close of September, 1940.

RATIO (PERCENT OF PRODUCTION TO CAPACITY

	Sept. 1941	Sept. 1940	Aug. 1941	July 1941	June 1941
The month..	78.3	61.8	76.5	74.9	74.0
12 months...	62.5	48.6	61.0	59.6	58.3

Sand-Lime Brick Production and Shipments

NINE active sand-lime block and brick plants reported for September and eight for August, statistics for which were published in September.

AVERAGE PRICE FOR SEPTEMBER

	Plant Price	Delivered Price
Grand Rapids, Mich...	....	$14.00 and 28.00
Detroit, Mich.	....	16.00
Sebewaing, Mich.	$10.50	....
Saginaw, Mich.	12.00	....
Seattle, Wash.	16.50	18.50
Mishawaka, Ind.	13.00	14.25
St. Louis, Mo.	....	....
Minneapolis, Minn....	10.00	11.50 to 12.00
Watertown, Mass.	12.50	13.50

STATISTICS FOR AUGUST AND SEPTEMBER

	*August	†September
Production	3,719,180	‡5,008,600
Shipments (rail) ...	91,000	517,000
Shipments (truck) ..	3,634,845	3,809,642
Stock on hand	1,641,482	1,199,525
Unfilled orders	2,000,000	1,460,000

* Eight plants reporting: incomplete, two not reporting stock on hand and three not reporting unfilled orders.

† Nine plants reporting: incomplete, one not reporting stock on hand and three not reporting unfilled orders.

‡ Includes 95,000 double bricks.

Sell Dredge

ACME SAND COMPANY, Eustis, Fla., has sold a dredge for $10,000 to the city of Leesburg, Fla.

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KEYSTONE
REGISTERED U. S. PATENT OFFICE

MODEL 51

BLAST HOLE DRILL

What Blast Hole Drills Must Have

Factors that make blast hole for a well drilling machine are *power, weight of tools, stroke adjustment* and *shock absorption.*

Skillful operation is an additional requisite that the wise quarry superintendent will not forget.

KEYSTONE has for long years supplied to the quarry industry the best in well drill design and manufacture. No specification of material or fabrication is permitted in our shops to fall below the best available for the purpose intended.

The merited result has been recognized achievement in this field.

Keystone drill owners keep their Keystones.

KEYSTONE DRILLER CO.
Beaver Falls, Pa.

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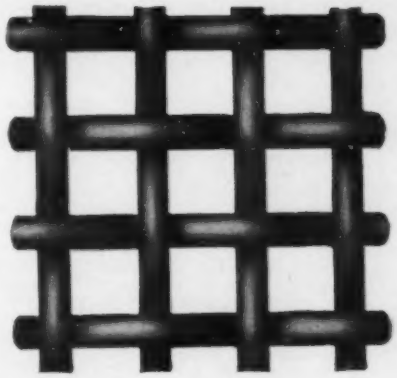
ABRASO
SCREEN
TRADE JERSEY



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Roebling "Abraso" Screening is made of special steel—manufactured by *custom methods* in Roebling's own mill. It is steel that offers maximum resistance to the BEATING of stone and gravel.

To further assure long screening life, Roebling controls every step of manufacture from steel making to fabrication.

Roebling "Abraso" Screening is available for every sizing, cleaning and grading service.

JOHN A. ROEBLING'S SONS COMPANY TRENTON NEW JERSEY

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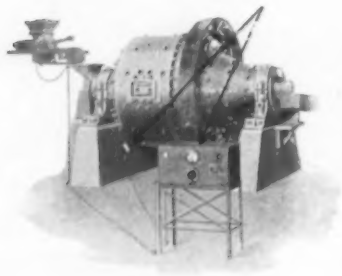
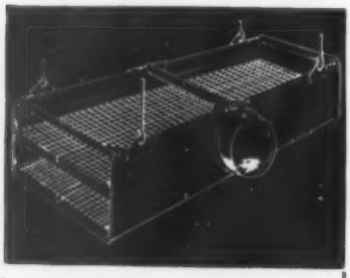
"ELECTRIC EAR"

Sound Control Unit is on the job continuously, maintaining maximum grinding capacity hour after hour and day after day. It has no other duties to perform.



Bulletin 42

HARDINGE
COMPANY, INCORPORATED — YORK, PENNSYLVANIA
NEW YORK, CHICAGO, SAN FRANCISCO, TORONTO



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VIBRATING SCREEN
5 DISTINCTIVE FEATURES . . .

1. Full Floating Shaft.
2. Eight Positive Stroke Adjustments (quickly changed).
3. Oil Lubricated.
4. Sturdy Construction.
5. Screen Cloth Easily Changed.

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LOW COST—EFFICIENT—ECONOMICAL

Write for Bulletin No. 939

Productive Equipment Corp.
2926-28 West Lake St., Chicago, Ill.

Traffic and Transportation

PROPOSED RATE CHANGES—The following are the latest proposed changes in freight rates up to and including the week of October 18:

Trunk Line

26795 (shippers; suggested by carrier). **Cinders, Clay or shale (haydite), C. L.** Establish to Brunswick and Savannah, Ga., 464c from Haydite, Ill., and 391c from Cincinnati, O (from beyond); to Jacksonville, Fla., 480c from Haydite, Ill., and 408c net ton from Cincinnati, O. (from beyond).

40248 (shippers). **Fluorspar,** in packages or in bulk, C. L., ex-river, min. wt. 40,000 lb., from points in Pittsburgh District, viz.: Allegheny, (Pgh. North Side), Pa., Aliquippa, Pa., Bessemer, Pa., Colona, Pa., Etna, Pa., Glassport, Pa., Glenwood, Pa., Hays, Pa., Junction Tfr. (33rd St. Sta. Pittsburgh), Pa., McKeesport, Pa., Munhall (Kenny Yard), Pa., New Kensington, Pa., Pittsburgh, Pa., Ranin, Pa., Rochester, Pa., South Duquesne, Pa., to Bethlehem, Pa., $4.40 per net ton. Reason: (See Note 5).

40262 (shippers). **Silicon carbide dust collector fines,** C. L., min. wt. 80,000 lb., from Keasbey, N. J., to Kellogg, N. Y., $4.50 per gross ton, in lieu of current 6th class rate of 30c per 100 lb. Reason: (See Note 5).

40284 (shippers). **Fluxing lime, not ground,** in bulk, C. L., min. wt. 70,000 lb., from LeGore and Woodsboro, Md., to Bethlehem, Pa., $2.10, and to Sparrows Point, Md., $1.80 per net ton. Reason: To Bethlehem, Pa., same as formerly in effect. Rate to Sparrows Point, Md., comparable with rate to Bethlehem.

40300 (shippers). **Limestone, crude, fluxing, foundry and furnace,** C. L. (See Note 3), from Lemoyne, Pa., to Bethlehem and Pittsburgh, Pa., $1.96 per gross ton, in lieu of current 6th class rates of 17c and 19c per 100 lb., respectively. Reason: (See Note 5).

40304 (shippers). **Quartzite (silica rock),** crude, broken or crushed (not ground or pulverized), in open top cars, C. L. (See Note 3), but in no case less than 80,000 lb., from Allegheny, Va., to Alloy, W. Va., $1.54 per net ton in lieu of current 6th class rate of $3.60 per net ton. Reason: (See Note 5).

Southern

26851 (shipper; suggested by carrier). **Phosphate rock, not acidulated (acid phosphate) nor ammoniated, and limestone, phosphatic,** C. L. Establish to Columbia, Miss., and Amite, La., from Mt. Pleasant, Tenn. (Group 1), 47c; Paytona (Group 2) stations as named in Item 55, L&N I. C. C. A-16363, 508c per 100 lb.

26873 (shippers; suggested by carrier). **Crushed stone or granite,** C. L. Establish proportional rate of 348c net ton, Danville, Gretna, Va., Asheville, Durham, Greensboro, Henderson, Mt. Airy, Oxford, Salisbury and Winston-Salem, N. C., to E. St. Louis, Ill.

26883 (carriers). **Gravel, slag and stone,** C. L. Cancel water competitive rates from points in Ala., Ga., and S. C., to Brunswick, Savannah, Ga., Charleston, S. C., and Yukon, Fla., published in S. F. T. B. Tariff 388D. Mileage scale rates published on page 9, Sup. 64 of involved tariff to apply.

26904 (shipper; suggested by carrier). **Limestone, ground or pulverized,** C. L. Establish specific rates from Mascot, Tenn., to stations on C. & O. Ry. in W. Va., made on same basis as rates from Dugan, Ky.

New England

55801. To cancel rate of 21c on **crude feldspar,** and **crude syenite,** from Mathews and Rumney, N. H., to Trenton, N. J., as published in Item 415 of B&M ICC A-2990, and apply in lieu thereof class rates. Reason: Obsolete.

55870. **Silica sand,** min. wt. 50 tons of 2,000 lb., except when cars of lower capacity are furnished for carriers' convenience, the min. wt. will be marked capacity of car, but in no case less than 40 tons of 2,000 lb., from Boston, Mass., to Rockland, Me. Present, 25 (6th class as per Agent Doe's I. C. C. 157). Proposed, $1.65 net ton. Reason: To enable the rail carriers to obtain a haul on this traffic.

Southwestern

25806. **Feldspar,** Custer, Hill City, Keystone, Nahant, Pluma, Pringle and Trojan, S. D., to Palestine and Waco, Tex. To establish carload rates on feldspar from Hill City, Keystone, Nahant, Pluma, Pringle and Trojan, S. D., to Waco, Tex., of $7.33 a ton, min. wt. 80,000 lb., and to Palestine, Tex., of $9.35 a ton, min. wt. 50,000 lb., and $8.03 a ton, min. wt. 80,000 lb.

25845. **Limestone, ground or pulverized,** Limedale Spur, Ark., to Vicksburg, Miss. To publish rate of $1.90 per net ton (See Note 22, on Ground Limestone, in box cars, from Limedale Spur, Ark., to Vicksburg, Miss.

25886. **Vermiculite, calcined or roasted,** Kansas City, Mo., to Lake Charles, La., Beaumont and Port Arthur, Tex. To establish rate of $9.99 per ton of 2,000 lb. on vermiculite, calcined or roasted, min.

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

Uniform Separation

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of cement and other extremely fine materials within a range of 60 to 400 mesh.

- Greater Capacity
- Cleaner Tailings
- 99% Through 325 Mesh
- 25% to 30% greater recovery of fines.
- Not affected by variation in speed or rate of feed.

Manufacturers also of "Reliance" Crushers, Screens, Elevators, Conveyors, Bin Gates, Grizzlies. Complete crushing, screening and washing plants for crushed stone, sand and gravel.

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OSGOOD

TYPE 90 FOR HEAVY DUTY WORK

Built to give long, satisfactory service under hard rock conditions

Write for details as Shovel, Dragline or Crane

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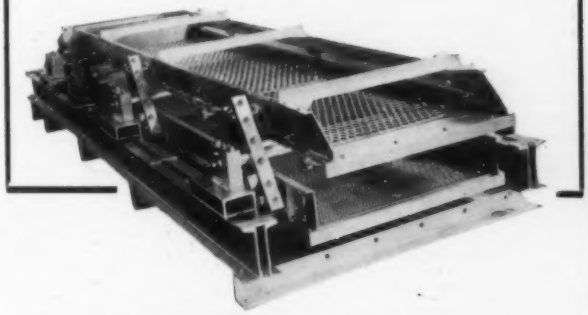
MARION, OHIO

The Double Action Screen

—It Shakes As It Whips



BECAUSE the arms of the Hendrick Screen are flexible, and the decks are free swinging, there is a whipping action at each reversal of direction.

Write for complete data on Hendrick Screens—ideal for sizing and dewatering.

HENDRICK MANUFACTURING CO.

47 Dundaff St., Carbondale, Pa.

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PLEASE CONSULT TELEPHONE DIRECTORY

Makers of Elevator Buckets of all types, Mitco Open Steel Flooring, Mitco Shur-Site Treads and Mitco Armorgrids, Light and Heavy Steel Plate Construction.

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MEET SPECIFICATION DEMANDS FOR BIGGER PROFITS

American Crushers are particularly designed to enable you to meet today's ever-tightening strict specifications—and with capacities to fill large orders. They are sturdily constructed with highest quality parts, and include all the engineering features necessary for superior performance taken from our 30 years experience in crusher manufacturing.

Investigate today for bigger profits.

AMERICAN PULVERIZER CO.

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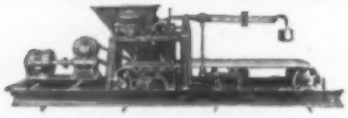
A BLENDER A MIXER

and Unequalled in Its Exactness



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These efficient, accurate, economical weighing and feeding machines have proven their value to operators of cement mills, for accurately proportioning stone and clay —also clinker and gypsum by weight and not by volume.

Also being used for weighing and feeding materials to all types of Grinding Mills.

The Poidometer is self-contained. The scale beam is graduated in pounds or kilos, and can be set at whatever amount of material may be required per foot of belt travel; the gate is then adjusted to suit this weight, and the machine will deliver the pre-determined amount of material with an accuracy of ninety-nine per cent.

Send for bulletin on the improved Poidometer with electrically operated regulating gate.

Write for Bulletin No. 2-A and get complete profit-producing facts!

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wt. 40,000 lb., C. L., from Kansas City, Mo., to Lake Charles, La., Beaumont and Port Arthur, Tex. on the same basis as now applicable to Galveston and Houston, Tex.

25898. **Lime rock, limestone, or chatts,** Mosher, Mo., to Senter, Mich. To establish on lime rock, limestone, or chatts, broken, crushed, or ground, straight or mixed carloads (See Note 2), a rate of $4.57 per net ton from Mosher, Mo., to Senter, Mich.

25920. **Stone grinding blocks, pebble mill,** from, to and between points in the Southwest. To establish the Class 17½ rating on stone grinding blocks, pebble mill, in bags, barrels or boxes; carload loose or in packages, min. wt. 50,000 lb., for application from, to and between points in the Southwest.

25929. **Roasted Dolomite,** Chicago, Ill., to Houston, Tex., and Sand Springs, Okla. To establish rates of 29c to Houston and 22c per 100 lb. to Sand Springs on roasted dolomite, C. L., min. wt. 60,000 lb., from Chicago, Ill.

25954. **Feldspar,** Colorado origins also Horse Creek, Wyo., to Palestine, Tex. To establish the following rates in cents per ton of 2,000 lb. on feldspar, C. L., min. wt. 80,000 lb. from Colorado origins shown below, also Horse Creek, Wyo., to Palestine, Tex.:

Canon City	645	Boulder	645
Denver	645	Buena Vista	700
Echo	645	Divide	673
Forks Creek	645	Manitou	673
Golden	645	Rollinsville	673
Roberts Spur	645	Salida	673
Spike Buck	645	Tolland	673
Texas Creek	645	Horse Creek, Wyo.	670
Waterton	645		

26001. **Flintstone pebbles,** from, to and between points in the Southwest. To establish the Class 17½ rating on flintstone pebbles, loose or in packages, C. L., min. wt. 50,000 lb., for application from, to and between points in the Southwest.

26123. **Sand and gravel,** between points in Arkansas and points in Arkansas, Kansas, Missouri and Oklahoma. To eliminate the expiration date of December 31, 1941, in connection with rates on sand, gravel and articles taking the same rates as published in Items 1300 and 1305 of S. W. L. Tariff 162-Q, J. R. Peel's I. C. C. 3369.

26727 (carrier). **Gravel (clay) and chert,** C. L. Cancel, as obsolete, rate of 87c net ton from Iuka and Oldham, Miss., to Memphis, Tenn., published in Item 1510, S. F. T. B. Tariff 388-D.

26757 (carrier). **Phosphate rock and phosphate limestone,** C. L. Extend expiration date in connection with rates from L. & N. R. R. and N. C. & St. L. Ry. stations in Mt. Pleasant-Centreville District, named in L. & N. R. R., I. C. C. A-16462, to Lake Ports of Buffalo, N. Y., Chicago, Chicago Heights, Ill., Cleveland, O., Detroit, Mich., Sandusky and Toledo, O., and Inland Points of Joliet, Ill., Lansing, Mich., and intermediate points on the direct route to Dec. 31, 1942.

26769 (carrier). **Slag,** C. L. Cancel, as obsolete, rate 100c net ton from Birmingham, Ala., to Chase, Ala., published in Item 20635 of S. F. T. B. Tariff 316-B.

Central

Sup. 1 to WDA 66410—**Sand, gravel and crushed stone,** C. L., WDA 66410, DB 3078, dated March 25, 1941, covering proposal to establish rates on, from Zone 2 and Zone 3 points to Liverpool and Hartsdale, Ind., is hereby withdrawn from docket.

Sup. 1 to W. D. A. 67770—**Brucite and dolomite (calcined or dead burned),** min. wt. 60,000 lb. W. D. A. 67770, D. B. 3091, dated July 11, 1941, covering proposal to establish Class 12 rating on, between Southwestern Territory and Southwestern Kans.-Mo. and Gateway territories. (Territory "A"), when originating at Narlo or Maple Grove, O., is hereby withdrawn from docket on request of proponent.

68018. **Limestone,** ground or pulverized, unburnt, C. L., min. wt. 60,000 lb. Establish on, from Valmeyer, Ill., to points in Ind., Mich., Ohio., Penn., and W. Va., rates as shown in Exhibit C attached.

Exhibit C

(Rates in cents per 100 pounds)

Proposed Rates on Limestone, Ground or Pulverized, from Valmeyer, Ill., to Representative Points

To (Repr.)	Prop.	To (Repr.)	Prop.
(Indiana)		(Ohio)	
Anderson	259	Bucyrus	325
Orleans	226	Chillicothe	314
Perkins	204	Circleville	314
Shipshewana	292	Canton	369
Washington	204	East Liverpool	380
(Michigan)		Findlay	314
Adrian	314	Hamilton	281
Ann Arbor	325	Lima	303
Bad Axe	391	Marietta	369
Bay City	358	Middletown	292
Cadillac	358	Mansfield	336
Dundee	325	Ney	303
Frankfort	358	Painesville	369
Flint	347	Springfield	292
Grand Rapids	314	Warren	391
Greenville	336	Willoughby	369
Jackson	314	Wadsworth	358
Lansing	325	Zanesville	347
Manistee	347	Piqua	292
Mt. Pleasant	358	(Pennsylvania)	
Pontiac	347	Erie	134
Pigeon	380	(West Virginia)	
St. Joseph	281	Charleston	369
Sturgis	303	Wheeling	380
Wyandotte	347	Owens	369
(Ohio)		Parkersburg	358
Alliance	380		

68020. **Gypsum rock,** ground, C. L., min. wt. 80,000 lb. Establish on, from Alabaster, and National City, Mich., to Kaukauna, Mosinee, Nekoosa, Port Edwards, Wis., 360c; Tomahawk and Wisconsin Dam, Wis., 400c per net ton.

68033. **Limestone, agricultural,** unburnt (not ground or pulverized), in bulk, in open top cars, C. L. (See Note 3).

Proposed Rates (in cents per net ton)

	From	
To	Martin, Ohio	Marblehead, Ohio
Fernwood, O.	160	149
Mahoning, O.	138	...
Mantua, O.	127	...
Unionport, O.	149	149
Waco, O.	138	127

68036. **Sand, all kinds, or gravel,** in open top equipment, C. L. Establish on, from Burbank, O., to Creston, Sterling, Rittman, O., 44c; Wadsworth, Barberton, O., 55c; Akron, O., 66c; West Salem, Polk, O., 44c; Galion, O., 94c; Caledonia, O., 99c per net ton.

68261. **Dolomite** (refractory dolomite, in granular form treated or untreated, clinkered and burned to a dead state), C. L. (See Note 3). Establish on, from Durbin, O., to Lyle, Tenn., 415c per net ton, via N. Y. C. (C) direct to Cincinnati, O., or Louisville, Ky., Sou. Lines to furnish routing beyond.

68277. **Crushed stone or crushed stone screenings,** C. L., Carey, O., to Ansonia, Rossburg, New Weston, Gilberts, St. Henry, 116c; Coldwater, 110c; Celina, 105c; Tama, 110c; Rockford, Ohio City, Van Wert, Cavett, Scott, Haviland, Paulding, Cecil, Sherwood, 105c; Ney and Bryan, 110c per net ton.

68304. **Limestone, ground or pulverized,** unburnt, min. wt. 60,000 lb., Quincy, Ill., and Hannibal, Mo., to points in Ind., Mich., and Ohio, rates as shown in Exhibit B.

68267. **Lime, common, hydrated, quick or slaked,** C. L., in bags, barrels, casks, iron drums, or in bulk. Establish on, to Jackson, Ohio, from Hannibal, Mo., Quincy, Ill., and Marblehead, Ill., Col. A,

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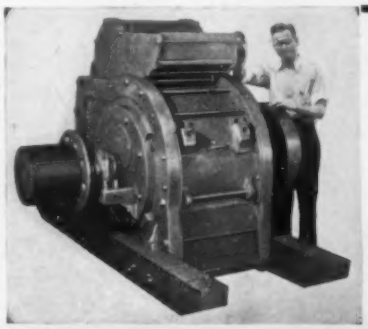

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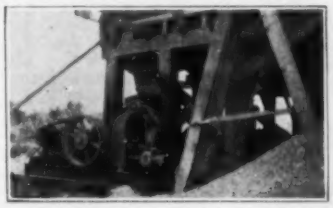

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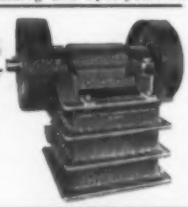

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68576. **Stone, crushed,** C. L. Establish on, from Mier, Ind., to Aurora, Ill., 190c per net ton.

68587. **Slag, commercial crushed** (a product of iron and steel blast or open hearth furnaces), in open-top cars, C. L. Establish on, from Tiffin, O., to Toledo, O., 88c per net ton.

68590. **Dolomite** (refractory dolomite, in granular form, treated or untreated, clinkered and burned to a dead state), C. L. Establish on, from Durbin, O., to Erie, Pa., via N. Y. C. (C), Cleveland, O., N. Y. C. (W).

68600. **Stone, crushed,** in bulk in open top cars; **stone screenings,** in bulk in open top cars, C. L. Establish on, from Bloomville, O., to Ann Arbor, Mich., 118c per net ton, via P. R. R., Toledo, O., A. A. R. R.

68605. **Barium, Sulphate or crude,** not ground, min. wt. 40,000 lb. Amend Items 710 to 744, incl., of C. F. A. L. Trf. 400-P, which items name C. L. rates on, from E. St. Louis, Ill., and Upper East Bank Mississippi Riv. Crossings, to pts. in C. F. A. territory, on traffic originating in Trans-Miss. River territory, by changing the min. wt. to read: "Min. wt. 90 percent of the marked capacity of car, but not less than 80,000 lb."

68326. **Fluorspar** in packages or in bulk, C. L., ex-river, min. wt. 40,000 lb. Establish on, from points in the Pittsburgh District, viz.: Allegheny (Pittsburgh North Side), Aliquippa, Bessemer, Colona, Etna, Glassport, Glenwood, Hays, Junction Trr. (33rd St. Sta. Pittsburgh), McKeesport, Munhall (Kenny Yard), New Kensington, Pittsburgh, Rankin, Rochester, South Duquesne, Pa., to Bethlehem, Pa., 440c per net ton via usual available routes.

68358. **Dolomite, roasted,** industrial, C. L., (See Note 3), Establish on, from Durbin, O., to Parkersburg, W. Va., 214c per net ton.

68380. **Limestone, ground or pulverized,** unburnt, in straight or mixed carloads, min. wt. 60,000 lb. Establish on, from Bloomington and Greencastle, Ind., to Long Branch, N. J., 490c per net ton.

68386 (a). **Sand,** all kinds, and **gravel,** in open top cars, C. L.; (b) **sand,** naturally bonded moulding, in all kinds of equipment; **sand** (except naturally bonded moulding; ground or pulverized sand) in closed equipment and in open top equipment. Establish on, from Havens, O., to destinations in Ohio, Ind., Pittsburgh, Pa., and Elkhorn City, Ky., rates as shown below.

[Rates in cents per net ton]

Destination	Proposed Rates—Description *Open	*Closed
Fremont, O.	66	76
Fostoria, O.	66	76
Tiffin, O.	66	76
Sandusky, O.	77	89
Wellington, O.	94	108
Mansfield, O.	99	114
Lima, O.	99	114
Grafton, O.	99	114
Ashland, O.	110	127
Cleveland, O.	110	127
Columbus, O.	116	133
Springfield, O.	127	146
Dayton, O.	133	159
Miamisburg, O.	138	159
Wilmington, O.	149	171
Hamilton, O.	149	171
Cincinnati, O.	160	184
Ironton, O.	182	209
Destination	**‡Open**	**‡Closed**
Decatur, Ind.	127	165
Muncie, Ind.	138	176
Richmond, Ind.	149	187
New Castle, Ind.	149	187
Indianapolis, Ind.	187	209
Pittsburgh, Pa.	187	209
Elkhorn City, Ky.	275	275

*Ohio intrastate rates (Ohio Docket 10400 scale).

‡Interstate rates (I. C. C. Docket 22907 scale).

68387. **Limestone, agricultural,** unburnt (not ground or pulverized), in bulk in open top cars, C. L. Establish on, from Carey and Marion, O., to Fernwood and Unionport, O., 149c; to Waco, O., 127c per net ton.

Route: To Fernwood, O.—From Carey, O., via C. & O. Ry., Upper Sandusky, O., P. R. R.; Marion, O., via C. & O. Ry., Columbus, O., P. R. R. To Unionport, O.—From Carey, O., via C. & O. Ry., Columbus, O., P. R. R., C. & O. Ry., Upper Sandusky, O., P. R. R. From Marion, O., via C. & O. Ry., Columbus, O., P. R. R. To Waco, O.—From Carey, O., and Marion, O., via C. & O. Ry., Toledo, O., W. & L. E. Ry.

68418. **Slag,** except commercial crushed, in open top equipment, C. L., min. wt. 80 percent of the marked capacity of car. Establish on, from Latimer, O., to Youngstown, O., 55c per net ton.

68401. **Sulphate of alumina,** C. L., min. wt. 90,000 lb. Establish on, from Cleveland, O., to Pisgah Forest, N. C., 42c to alternate with present rate (Class 25, min. wt. 40,000 lb.).

68578. **Limestone, agricultural,** unburnt, in bulk, in open top cars, C. L. Establish on from Gibsonburg and Woodville, O., to Mahoning, Mantua, O., 154c; Unionport, O., 149c, and Waco, O., 138c per net ton. Routes: Via P. R. R. direct; P. R. R.-Warren, O.-Erie R. R.; P. R. R.-Canton, O.-W. & L. E. Ry.

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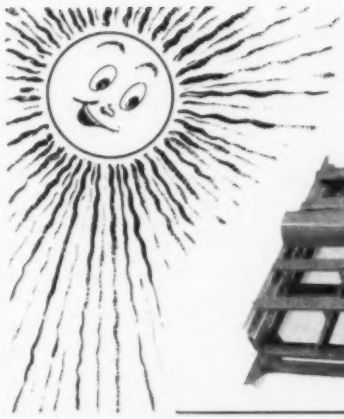

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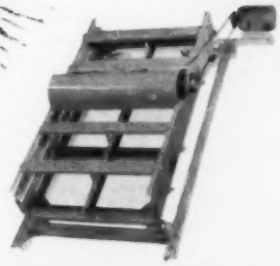

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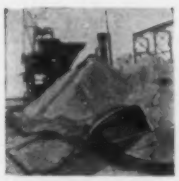

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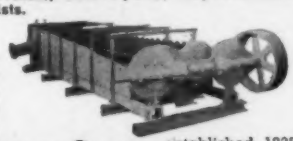

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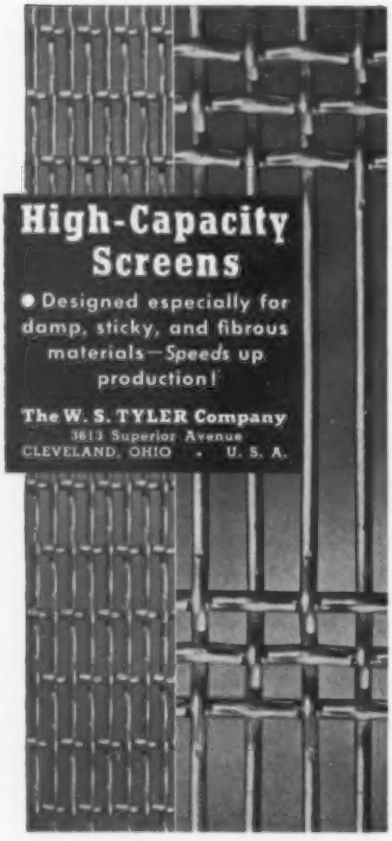
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OBITUARIES

JAMES C. LENAHAN, purchasing agent, Link-Belt Co., Philadelphia, Penn., died suddenly at Somers Point, N. J. Mr. Lenahan had been a Link-Belt employe for 36 years and purchasing agent since 1918.

•

W. M. BENNETT, who at one time was connected with the Lehigh Portland Cement Co., Chicago, Ill., died recently at the age of 44.

•

WAYMAN L. HESTON, owner of the Heston Certified Concrete Co., Indianapolis, Ind., passed away at the age of 36 after a heart attack. Mr. Heston, a native of Red Key, Ind., was graduated from Purdue University in 1927 and was formerly in the gravel business.

•

DANIEL ERASTUS HUBBARD, president of D. E. Hubbard & Sons, a sand, gravel and trucking firm, Bay Shore, N. Y., died recently at the age of 80 after a short illness.

•

JOHN B. FORD, pioneering industrialist, executive in numerous glass, chemical and shipping firms, and president of the Huron Portland Cement Co., Detroit, Mich., died recently at his Grosse Point, Mich., home. He was a grandson of John Baptiste Ford, early steel maker and founder of the Pittsburgh Plate Glass Co. In 1891 Mr. Ford joined his grandfather in the first exploitation of Michigan chemical mineral wealth, extracting salt at Wyandotte, near Detroit, for manufacture of soda ash. When the health of the elder Ford failed, his grandson took over the plant, then known as the J. B. Ford Co. The company changed its name in 1894 to the Michigan Alkali Co. After the death of the elder Ford in 1903, John B. Ford became head of all the affiliated concerns, including the Wyandotte Portland Cement Co. Quarries were opened at Alpena, Mich., and Mr. Ford organized the Wyandotte Transportation Co. to operate a large fleet of Great Lakes freighters. In 1939 he was succeeded as president of the Michigan Alkali Co. by John B. Ford, Jr., his son. Mr. Ford retained directorships in the Huron Portland Cement Co., the Libby-Owens-Ford Glass Co., and other firms.

•

FRED R. LOWELL, sales manager of the Superior Engine Division of the National Supply Co., Springfield, Ohio, was among the 14 persons killed in the crash of a Douglas transport airplane five miles north of Moorhead, Minn.

•

EDWARD WHITEHEAD, chairman of the board of directors of Whitehead Brothers Co., New Brunswick, N. J., with which he had been associated for the past 51 years, died Oct. 18 after a long illness. Mr. Whitehead was 76 years old. He was the grandson of the founder of the Whitehead sand business, Samuel Whitehead.

•

EUGENE R. ATWOOD, treasurer and general manager of the Old Colony Crushed Stone Co., Quincy, Ill., passed away recently at the age of 75. From the time he started to work, even while attending High school, Mr. Atwood was associated with the rock products industry. In 1902, he became associated with the Old Colony Trap Rock Co. of Quincy and remained with that organization for several years. In 1905, he formed the Tidewater Broken Stone Co. in Quincy, which shipped stone into Boston by water where it was used exclusively for concrete aggregates, until the increasing use of gravel and motor truck transportation placed the firm at a disadvantage. He returned to the site of the Old Colony Trap Rock Co. in 1908 and organized the Old Colony Crushed Stone Co.,

THE ROSS FEEDER

Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.

High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

19 Rector Street
NEW YORK, U. S. A.

2 Victoria Street
LONDON, S. W. 1., ENGLAND

"PENNSYLVANIA" REVERSIBLE HAMMERMILL

boosting the efficiency of the secondary reduction at a western Cement Plant, by Major Impact Crushing,—Automatic Hammer Turning,—and Sharply Reduced Upkeep Costs.

A REVERSIBLE Hammermill may afford just the increased output and efficient uninterrupted production which you now need to keep pace with demand upsurge.

"PENNSYLVANIA" Engineers are at your service.

PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Building
Philadelphia

RYERSON CERTIFIED STEELS

10 Strategically-Located Steel-Service Plants

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

Jeffrey

A NAME THAT STANDS FOR QUALITY—LONG SERVICE

Chains, Conveyors, Bucket Elevators, Feeders, Screens, Grinders, Portable Loaders and Conveyors, Car Pullers, Crushers, Pulverizers, Shredders, Dryers, Coolers, Transmission Machinery, Mono-veyor Storage Systems

Write for engineering data

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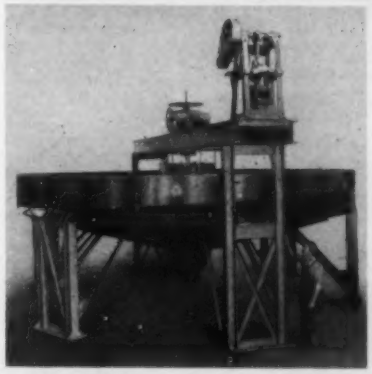
935-99 North Fourth Street, Columbus, Ohio

Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Huntington, Houston, Milwaukee, Pittsburgh, Philadelphia, New York, Scranton, Salt Lake City, St. Louis, Terre Haute



DENVER HYDRO-CLASSIFIER

The Denver Hydro-Classifier is designed for fine sizing and de-sliming problems where it is essential to reduce materials to sizes minus 200 mesh to 10 microns. Enclosed integral lift vertical worm gear drive makes it easy to raise rakes. The spiral rakes convey material to center cone in shortest time. Ask us how these machines will save you money.

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1400 Seventeenth St.
Denver, Colorado

New York, N. Y., 50 Church St.
Salt Lake, Utah, McIntyre Bldg.
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Mexico, D. F., Baker Building

WILFLEY centrifugal SAND PUMPS

for Slurries, Sand Tailings, Slimes, Acid Sludges

Save Pumping Costs

Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*

A. R. WILFLEY & SONS, Inc., Denver, Colo., U. S. A.
NEW YORK OFFICE: 1775 BROADWAY

SAVE STEEL FOR NATIONAL DEFENSE

WELD Jaw Plates, Gyratory and Roll Crushers, Shovel Teeth, Hammers, Tractor Tread Grousers

with

MANGANAL

Reg. U. S. Pat. Office. U. S. Patents 1,876,738—1,947,167—2,021,945

11 to 13½% Manganese Nickel Steel

WELDING ELECTRODES, WEDGE and APPLICATOR BARS, HOT ROLLED PLATES

STÜLZ - SICKLES CO. *Sole Producers* 134-142 Lafayette St., Newark, N. J.

Sold Thru Distributors Only

NAT-ALOY WIRE CLOTH

"Nat-Aloy" Lock Crimp Meshes
Assure Accurate Separations

Abrasive resistant, non-crystallizing. Immediate shipment from stock . . . all widths . . . all meshes . . . attractive prices.

Send for our detailed catalog No. 55.

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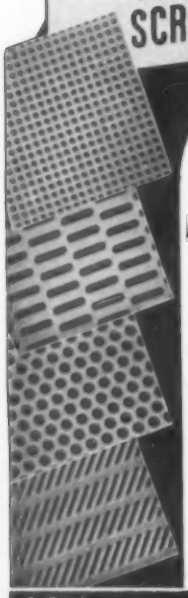
HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Church Street
New York, N. Y.

PERFORATED Metal SCREENS



Any SIZE
Any SHAPE
Any METAL
Any PERFORATION

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You can safely specify H & K screens and be assured of maximum screening results. Quality both in material and workmanship is always a first consideration.

Write for prices.

The Harrington & King PERFORATING Co

5650 Fillmore St., Chicago—114 Liberty St., N. Y.

FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

EARLE C. BACON, Inc.

17 John St., New York, N. Y.

Record Gravel Sales

MANNING & LOCKLIN GRAVEL CO., Detroit, Mich., reports that sales volume for the past three months reached an all-time high in the history of the company. Perry Manning, vice-president of the company, attributes this record to the vast number of industrial, residential and road building for defense jobs in the Detroit area.

New Incorporations

Delaware Stone & Construction Co., Wilmington, Del., has been incorporated to deal in stone, bricks and tile. Capital stock 100 shares, no par value. Incorporators are Angelo, Silvio and Frances Mangiocchi, Wilmington, Del.

Wilbert Burial Vault Co., Dallas, Texas, has been incorporated with a capital of $7000. Incorporators are Ernest L. Rodgers, Martha Hale Rodgers and Fletcher G. Rodgers.

North Georgetown Sand & Gravel Co., Alliance, Ohio, has been organized with a capital stock of 300 shares, no par value. Incorporators are Paul A. Kintz, L. W. Lehanis and J. F. McIntee .

Mantano Lime & Stone Co., Bourbannais, Ill., has been organized as a limestone quarry and plant with a capital of 1000 shares common stock, par value $100 a share. Incorporators are L. Cox, John Cox and John Cox, Jr. Robert A. Barnes, Lacon, Ill., is the agent.

Arrow Rock Co., Los Angeles, Calif., has been granted permission to operate a rock, sand and gravel business. Capital stock 20,000 shares, par value $10 a share. Directors are M. F. Joyce, Winifred Joyce and A. W. Beaucaire.

The C. M. Johnston & Sons Sand & Gravel Co., Helena, Ark., has notified Secretary of State C. G. Hall that its name has been changed to C. M. Johnston & Sons, Inc.

Cumberland Quarries, Inc., Indianapolis, Ind., has been granted a charter to engage in the stone quarrying and construction business. Capital stock 1000 shares Class A preferred and 2000 shares Class B. preferred stock of $100 par value. Incorporators are Norman E. Kelb, C. Dana Ward, J. Wright Peterson and Albert M. Campbell, who is also the agent.

Fordyce Gravel Co., Pharr, Texas, has been granted authority to increase its capital stock from $60,000 to $125,000.

East Montpelier Sand & Gravel, Inc., East Montpelier, Vt., has filed an affidavit to issue 75 shares of $100 par value common stock. Twenty-five shares will be issued for machinery and equipment and 50 shares for cash. Incorporators are Benjamin Simeone, S. A. Casellini and T. Tracy Lawson.

Belknap Quarry Company, Belknap, Ill., is the name of a new company recently incorporated.

Baker Sand Co., Benton Harbor, Mich., has been incorporated to deal in sand with a capital stock of $5000. Incorporators are W. H. and Mamie E. Baker and Suzanne U. Kelley.

Minnesota Concrete Products Corp., Minneapolis, Minn., has been incorporated to manufacture, prepare for market or other uses, buy and sell or otherwise dispose of, all kinds of brick, tile, blocks, and other kinds of building or construction materials. Incorporators are C. H. Klein, Henry Conroy and Geo. K. Foster.

Penn-Jersey Concrete Pipe Co., Almonesson, N. J., has been incorporated with a capital stock of 200 shares. Horace Easterday is the agent.

Manufacturers' News Notes

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has announced that they are beginning to clear ground for their new $9,066,000 supercharger plant which, upon completion, will give Milwaukee its first real "blackout" factory, and will house modern speed-up production facilities for turning out the urgently needed mechanism that, along with the U. S. bombsight, has been described as potentially one of the most decisive weapons of the war.

R. G. LeTourneau, Inc., Peoria, Ill., has announced the appointment of Elmer Isgren, former plant superintendent, as manager of the entire factory at Peoria, Ill., succeeding Ray Peterson, vice-president and plant manager who resigned recently to conduct business on the West Coast. Mr. Isgren started with LeTourneau in February, 1930, in the Moss Avenue shop at Stockton, Calif. He came to Peoria, Ill., with the LeTourneau organization in 1935 as a welding foreman and was promoted to plant superintendent in 1937. Mr. Isgren's former job will be handled by Maurice Foote as superintendent of Plant 1 and C. D. Cook as superintendent of Plant 2.

Chain Belt Co., Milwaukee, Wis., has announced the appointment of A. W. Thomas as sales manager of the Construction Machinery Division, succeeding B. F. Devine, recently promoted to manager of that division. D. A. Kalton has been made assistant sales manager and A. J. Frank assistant to the manager. Mr. Thomas, a Civil Engineering graduate of Purdue University, joined the Chain Belt organization in 1927 as a member of the company's Manufacturing Division and later transferred to the Engineering Division, where he became assistant to the chief engineer. More recently he joined the field sales staff and successively became district manager and assistant to the sales manager.

Link-Belt Company, Philadelphia, Pa., has announced the appointment of William A. Craig as Purchasing Agent to succeed James C. Lenahan, who died suddenly at Somers Point, N. J. Mr. Craig, a native of Scotland and an American citizen since 1920, joined Link-Belt in 1916, and had been Mr. Lenahan's direct assistant for many years.

Hercules Powder Co., Wilmington, Del., has announced the retirement of C. D. Prickett, vice-president and director. Mr. Prickett had been with this company since its formation in 1913, when he was put in charge of all Hercules' black powder operations. Both Mr. Prickett's father and grandfather were prominent in the black powder industry, and Mr. Prickett himself has been associated with the powder business for more than 60 years.

The Bristol Co., Waterbury, Conn., has announced the transfer of H. R. Bristol from their Chicago office to their Boston office, and the appointment of J. E. Booth to take over the territory vacated by Mr. Bristol.

The Marmon-Herrington Co., Indianapolis, Ind., awarded Ernest C. King a ten-year service button and a substantial bonus for his years of loyal devotion to the company's interests. The presentation ceremony took place in the office of Bert Dingley, vice-president, who officiated in the absence of A. W. Herrington, president. Mr. King is known throughout the Northeastern states as an authority on difficult transportation problems.

The Pioneer Engineering Works, Minneapolis, Minn., manufacturers of mine, quarry, and gravel pit matchinery, has announced that E. F. Craven Co., Greensboro, N. C., is their new dealer for the State of North Carolina.

Classified Advertisements

POSITIONS WANTED—POSITIONS VACANT—Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

CONSOLIDATED CAN HELP YOU OVERCOME TODAY'S CONDITIONS

GYRATORY CRUSHERS

1—16" Telsmith.
1—18" Traylor Bulldog type.
1—20" Superior McCully.
1—27" Gates, with 100 H.P. A.C. motor.
1—No. 410-TZ Traylor, 10" feed, can be set to ½".
1—2' Symons Cone Crusher, fine bowl.
3—Kennedy No. 10, No. 25, No. 49.
2—Telsmith No. 2-H and No. 3-F.
1—No. 40 Telsmith, 5" feed, ⅝" discharge; also No. 40 with 40 H.P. A.C. motor.

JAW CRUSHERS

48"x42" NERMCO; 24"x36" Allis-Chalmers; 9"x36" Wheeling; 15"x36" Universal; 18"x24" Blake, 18"x24" Pioneer; 10"x36" Farrel, and smaller sizes.

VIBRATING SCREENS

1—4'x14' SYMONS, DOUBLE DECK.
2—4'x7' Leahy, 2 deck, motor driven.
4—3'x5' Tyler Hummer, 2 deck, No. 31, enclosed.
2—4'x7' Jeffrey-Traylor, Type FB-4, 2 deck.
1—3'x7' Simplicity, 2 deck, motor driven.
1—3'x8', 3'x10' Niagara, 3 deck.
1—4'x8' Huron, 1 deck, V-belt drive.

2—6' x 12' ROD MILLS

Hardinge straight side Rod Mills, iron lined, Falk herringbone steel gears, Falk enclosed gear drive units, charge of rods with each mill. Arranged for peripheral or trunnion discharge. In excellent condition and for immediate shipment.

COAL PULVERIZERS

2—Erie City "Unitype" Size A, also Size C, with 60 H.P. motor.
4—4'x8' Kennedy; also 3'x6'.
3—Foster Wheeler Size J, with 150 H.P. motors.
2—Riley "Arrow" Size G.
2—No. 55 Raymond "Imp" with 60 H.P. motors.

RAYMOND PULVERIZERS

2—4 roll HIGH SIDE, COMPLETE. Located Toledo. Must be removed by Nov. 10th. Priced accordingly.
2—2 roll HIGH SIDE, COMPLETE. Located Mobile, Ala.
Nos. 0000, 00, 1 and 3, beater type. Also Nos. 55, 60, 90 "Imp" type.

ROTARY KILNS

5'x24', 7'x40', 6'x60', 7'6"x125'.

ROTARY DRYERS, Direct Heat

Ruggles-Coles, double shell: 5'x26', 5'x30', 6'x35', 5'6"x60', 80"x45'.
Single Shell: 5'x30', 6x40, 6x50, 6x60, 7x60.

LIME HYDRATORS

Weber Sr. type, made by Arnold & Weigel with No. 1 Raymond Bros. Lime Separator; also Kritzer.
One Complete Hydrated Lime Plant.

BALL, ROD AND TUBE MILLS

Ball Mills, 6x6, 6x8.
Rod Mills: 4'x8', 6x12 Hardinge, straight side.
Tube Mills, 2—5x20' Bonnot Co., silex lined.
1—5x22' Bonnot Co., silex lined.
6'x23', 2—6'6x20' Smidth, silex lined.
5'x22' Allis-Chalmers, 5'x35' Vulcan, both iron lined.

HARDINGE CONICAL MILLS

Silex lined: 4'6x16", 5'x22", 6'x22", 6'x48", 8'x18", 8'x30".
Iron lined: 3'x24", with classifier; 4'6x16", 5'x22", 6'x22", 8'x18", 8'x30", 8'x36" with motor; 8'x48" with air classifier; 8'x48".

CONSOLIDATED PRODUCTS CO., INC.
15-16-17 PARK ROW *Our Shops and Yard at Newark, N. J., cover eight acres.* **NEW YORK, N. Y.**

NEW AND USED EQUIPMENT FOR IMMEDIATE SHIPMENT
SUBJECT TO PRIOR SALE

NEW —32" Cage Mill, 3 to 4" feed rock or gravel, good for maximum 50% crushing, 40 to 60 tons per hour.
NEW —Steel Truck and Wheels, equipped with new pneumatic tires, tongue for tractor hitch, 10-ton capacity, for mounting 40 x 20" rolls or 15" x 36" crusher.
USED—9" x 16" RELIANCE Jaw Crusher, good condition.
USED—Model 101 Type K Day Limestone Pulverizer, 2 to 3 tons capacity.
USED—GRUENDLER No. 2 Monster Limestone Pulverizer, 4 to 5 tons per hour.
USED—No. 7 MITTS & Merrell Wood Hog, plain bearing, 14" x 14" hopper opening, capacity 5 tons per hour.
USED—24" x 18" LIPPMAN Portable limestone Pulverizer, with 14' elevator, in excellent condition.
USED—XXB GRUENDLER 24" x 18" welded steel Limestone Pulverizer, 6 to 7 tons per hour capacity.
USED—SCHUTTE Type F, Model L, Hammermill with or without fan for sawdust, oyster shells, etc., in excellent condition.
USED—GRUENDLER light type, 2' x 8' single deck Vibrating Screen.
USED—GRUENDLER 20" x 12" saw-dust, oyster shell or fertilizer Grinder, slow speed.
USED—50-16 SUPREME (GRUENDLER) Hammermill for sawdust, oyster shells, bones or fertilizer.
One (1) Factory reconditioned LeRoi RA2P 65-HP gasoline power unit.

STATE FULLY YOUR REQUIREMENTS.
GRUENDLER CRUSHER & PULVERIZER CO.
2915-2917 North Market Street
St. Louis, Missouri

LIQUIDATION

1—Rotary Kiln, 8' x 90'

2—Ball Mills, 7' x 10', motor driven
1—Gruendler Hammer Mill
2—Steel Stacks 5'6" x 86' high
2—Steel Buildings 55' x 99', 40' x 54'
2—Belt Conveyors 16" x 50' and 56'
2—Jeffrey Bucket Elevators
6—Gould Pyramid Pumps 2" to 4"
15—Wood Tanks from 5,000 to 14,000 gals.
Large quantity of corrugated sheeting, piping, shafting, Tanks, Pumps, etc.

Send for Catalog

5—Rotary Dryers, 2' x 12', 3' x 11', 56" x 30', 6' x 40', 8' x 80'
1—Chrysler Full Diesel Engine, 100 HP
1—Rod Mill 5' x 10' approx., self-balancing type
4—Concentrating Tables 25 to 40 ton capacity
4—Trommel 36" x 36" Screens, new
1—Allis-Chalmers Rotary Screen 40" x 18'
1—Jeffrey 24" x 24" Single Roll Crusher
1—Ingersoll Rand Compressor ER-1, 14" x 12", belt driven
4—Tyler Hummer, Sturtevant Vibrating Screens
4—Williams, Gruendler Hammer Mills

BRILL Equipment Corporation
183 Varick Street
New York City

CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (Like new). 20" Superior McCully, Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 3, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x84, 48x66, 42x48, 24x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36. 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x30, 8x24, 12x24, 9x36, 9x30, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 2-F & 40. Traylor 36" TZ, 8", 10", 12". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 12¼x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16. Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 8 & 9. Jeffrey 20x18 & 36x12. Day Nos. 20 & 40., Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 8'x30' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller-Lehigh, Etc., Etc.
CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x24, 1030 Good Roads, 9x40 Austin-Western, 9x36 C.R.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Draglines, Drag Scrapers, Dredges, Drills, Engines, Elevators, Excavators, Generators, Hoists, Kilns, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Stacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. **(I have equipment at many points in the United States and Canada. What you need may be near your plant.)**

ALEXANDER T. McLEOD
7229 Rogers Avenue CHICAGO

FOR SALE

¾ yd. Brownhoist combination and shovel.

COOGAN GRAVEL COMPANY
805-b Lehmann Building, Peoria, Illinois

STEAM SHOVEL

Marion, Model 36, 32' boom, 22' dipper stick, on cats, 1⅛ yd. bucket. Very low price.

THE INDUSTRIAL EQUIPMENT CORP.
P. O. Box 1647, Pittsburgh, Pa.
Warehouse: Carnegie, Pa.

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
Fort Wayne, Indiana

The same diamond is bought and sold many times; yet is never regarded as "second hand" because it continues to perform its function of being beautiful, just as it did when new. Likewise E.C.A. equipment is not regarded as "second hand;" because it is REBUILT and RE-GUARANTEED to properly perform its functions. Yet it costs far less than new equipment.

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

BINS

8—1 150-ton Blaw Knox, 1 118-ton Blaw Knox, 1 117-ton Blaw Knox, 1 72-ton Blaw Knox, 1 51-ton Blaw Knox, 1 35-ton Blaw Knox, 2 30-ton Johnson. Above with or without weigh batchers.

All of the above are 2 comp. bins.

CABLEWAYS

1—Lidgerwood 15 ton cap. cableway, 2300' span, with Lidgerwood 12¼x15 steam hoist, with or without steel towers.

CRANES, DRAGLINES AND SHOVELS

1—Link Belt K-55, ser. No. 1698, 70' boom, 2 yd. bucket, also have a 2 yd. shovel attachment.

1—Link Belt K-48, ser. No. 1728, 60' boom, 2 yd. bucket.

1—Northwest Model No. 5, Serial No. 3572, 50' boom with 1¼ yd. pull shovel attachment.

1—Link-Belt model K-42, ser. No. 1265, 45' boom, 1¼ yd. bucket, also 1 yd. trench hoe att. or 1¼ yd. shovel front.

1—Northwest Model 104, ser. No. 2079, 45' boom, 1¼ yd. bucket; with 1 yd. shovel attachment.

3—Northwest Model No. 4's, Ser. No's. 3441, 3445, 3493, with 40' boom and 1 yd. pull shovel attachments.

2—Northwest model 105, ser. No. 1645, 1522, 40' boom, 1 yd. bucket.

3—Osgood Heavy Duty, ser. No. 2069, 2087 and 2493, 40' boom, 1 yd. bucket and with 1 yd. shovel attachment.

2—Erie gas-air ser. Nos. 4365 and 9758 with 45' boom and 1¼ yd. shovel attachment.

1—Thew ¾ yd. gasoline shovel with ¾ yd. shovel front and 40 ft. crane boom. Serial No. 2801.

1—Koehring Model 301, Ser. 544, 40' boom, ¾ yd. bucket.

1—P&H Model 206, Ser. No. 1901, ¾ yd., 40' boom.

1—Byers Bearcat Model No. 128, ½ yd. cap., ser. No. 4119 with 30' boom.

1—Byers Bearcat model 27, ser. No. 5289, 30' boom, ½ cl. sw. ½ yd. bucket.

1—Erie Steam Crane, ¾ yd., 40' boom.

CRUSHERS

7—Jaw Crushers: 1—15x36" Universal; 1—15x36" Cedar Rapids; 1—15x26" Champion; 1—12x20" Acme; 2—10x20" Climax No. 2½"; 1—9x16" Acme.

4—Gyratory Crushers: 1—No. 5 Allis-Chalmers; 1—No. 5 Austin; 1—No. 5 Gates; 1—No. 0 McCully.

LOCOMOTIVES

30—Locomotives, gas, electric and steam, 2 to 20 tons, 24", 36" and standard ga.

PUMPS (DREDGE)

2—10" Morris Dredge pumps, 1 to direct connect to motor, other belt drive.

4—Belt driven: 3 Morris Mang., 1—8", 2—6"; 1—8" Cataract.

PNEUMATIC TOOLS

36—Rock Drills, mounting, wagon, column or tripod.

53—Jackhammers, various makes and sizes.

EQUIPMENT
CORPORATION
of **A**MERICA

119 So. Washtenaw Av. Chicago, Ill.
P. O. Box 933, Dept. R.P. Pittsburgh, Pa.
1511 Race St. Philadelphia, Pa.
30 Church St., Dept. R P. New York, N. Y.

CONCRETE EQUIPMENT

Ready-Mix Blaw Knox concrete plant, complete, large size, splendid condition, unusual opportunity, specifications furnished.
Blaw Knox complete central mixing plant.
Heltzel bin, 225 ton, 4 compts., weigh batcher.
Blaw Knox complete central mixing plant.
Blaw Knox complete ready mix concrete plant.
Butler 100 yd. 3 compt. bin, weigh batcher.
Steel bin, 75 yds., single compt., sand and gravel.
Beaument 42 yd. two compt. bin.
200 ton rock storage bin, steel, heavy construction.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Smith 1 yd. tilting mixer, electric.
Ransome 28-S 1 yd. stationary mixer, elec.
Haiss bucket loader, caterpillar.
Barber Greene Model 42 bucket loader, cats.
Barber Greene Model 62 bucket loader, cats.

BUCKETS—STONE SKIPS

22—Steel stone skips, 2 to 3 yds.
1½ yd. heavy duty Blaw Knox digging bucket.
1¼ yd. heavy duty Blaw Knox, digging, clamshell.
1⅛ yd. Hayward rehandling clamshell.
1 yd. Hayward clamshell, rehandling.
¾ yd. Haiss rehandling, clamshell.
1 yd. Hayward orange peel, 4 leaf.
¾ yd. Hayward orange peel, 3 leaf.

SHOVELS—CRANES

Marion Model 125 Elec. Shovel, 2¾ yds.
2—Marion Diesel shovels, 1—¾ yd. cap.
2—Marion Steam shovels, 1½ yd capacity.
No. 50-B Bucyrus Erie electric shovel, 2 yds.
37-B Bucyrus Erie gas Shovel-Crane.
Northwest Model 105 ¾ yd. gas crane.
Northwest 1½ yd. gas crane, 60' boom.
Northwest 1 yd. comb. shovel-crane, gas.
Lima Model 101 comb. shovel-crane, 1¼ yds.
Marion Steam Shovel, 1¾ yd. capacity.
Ind. Brownhoist loco. crane, electric, 20 tons.
Ind. Brownhoist loco. crane, 25 tons, steam.

TRACTORS

RD-4 Caterpillar, with bulldozer.
D-5 Caterpillar, with bulldozer.

LOCOMOTIVES—CARS

2—Vulcan 6 ton, gas, 36" gauge.
2—Whitcomb 4½ ton, gas, standard gauge.
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505 "	36"	6	1/8"	1/16"	"
856 "	30"	6	1/8"	1/16"	"
520 "	30"	5	1/8"	1/16"	"
180 "	24"	6	1/16"	1/16"	Elevator
2305 "	24"	5	1/8"	1/32"	Conveyor
1298 "	24"	4	1/8"	1/32"	"
250 "	22"	8	1/16"	1/16"	Elevator
1874 "	20"	5	1/8"	1/32"	Conveyor
520 "	20"	4	1/8"	1/32"	"
506 "	18"	6	1/16"	1/16"	Elevator
1765 "	18"	4	1/8"	1/32"	Conveyor
285 "	16"	6	1/16"	1/16"	Elevator
1450 "	16"	4	1/8"	1/32"	Conveyor
516 "	14"	6	1/16"	1/16"	Elevator
509 "	14"	4	1/16"	1/32"	Conveyor
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....Aerial Tramways
....Aggregates (Special)
....Agitators
....Air Compressors
....Air Filters
....Air Separators
....Ash Receptacle Molds
....Asphalt Mixing Plants
....Batching Plants
....Bags
....Bagging Machines
....Balls (Grinding)
....Barges
....Batchers (Weighing)
....Bearings
....Belt Repair Equipt.
....Belting (Conveyor & Elevator)
....Bin Level Indicators
....Bins (Storage)
....Blasting Supplies
....Block Machines, Building
....Boats
....Brick Machines & Molds
....Buckets
....Building Tile Machines
....Bulk Cement Batching Plants
....Bulk Cement Storage Plants
....Bulldozers
....Bullscrapers
....Burial Vault Forms
....Calcining Equipment
....Calcium Chloride
....Carbon Dioxide Plants
....Cars (Industrial)
....Catch Basin Block Machines
....Cement Colors
....Cement Process
....Central Mixing Plants
....Chimney Block Mach. & Molds
....Clarifiers
....Classifiers
....Coal Pulverizing Equipment
....Concentrators
....Concrete Mixers
....Concrete Paints & Coatings
....Concrete Waterproofing & Dampproofing
....Contractors (Cement Mill)
....Conveyors
....Conveyor Idlers and Rolls
....Coolers
....Corn Crib Block and Tile Machines
....Correcting Basins
....Cranes (Crawler & Locomotive)
....Crushers
....Crushing & Screening Plants (Portable)
....Culvert Pipe Mach. & Molds
....Curing Equipment
....Curb Forms
....Derricks
....Dewatering Equipment
....Diesel Engines (Stationary & Automotive)
....Dippers & Teeth
....Disintegrators
....Dragline Cableway Excavators
....Drain Tile Machines
....Dredges
....Dredge Pumps
....Drills (Rock)
....Drill Bits
....Drill Sharpening Machines
....Drill Steel
....Drives (Gear Reduction)
....Dry Batch Conveyors
....Dryers
....Dust Collecting Systems
....Dust Precipitators
....Dust Recovery Plants
....Dynamite
....Electric Motors
....Electrostatic Separators
....Elevators
....Engineering Service (Consulting & Designing)
....Engines (Diesel, Gasoline, Steam)
....Feeders
....Floor Tile Machines
....Flotation Equipment
....Garbage Receptacle Molds (Concrete)
....Garden Furniture Molds (Concrete)
....Generators & M-G Sets
....Guns (Hydraulic)
....Gutter Block Machines (Concrete)
....Hoists
....Hoppers
....Hose
....Hydrators (Lime)
....Induced Draft Fans
....Joist & Slab Machines (Concrete)
....Kilns (Rotary, Shaft, Vertical)
....Laboratory Apparatus
....Lift Trucks
....Lime (Hydrated)
....Lime Handling Equip.
....Lime Plants
....Lime Putty Plants
....Loaders
....Locomotives
....Lubricants
....Manganese Steel Parts
....Mills (Ball, Compartment, Emery, Hammer, Rod, Roll, Tube)
....Mortar Mixers
....Pallets (Steel, Wood)
....Pans, Grinding (Wet & Dry)
....Perforated Metal
....Pipe (Dredge)
....Pipe Molds and Machines (Concrete)
....Plaster Mixers
....Pneumatic Hammers
....Portable Aggregate Plants
....Pulverizers
....Pumps (Pulverized Material)
....Railway Equipment
....Rectifiers
....Recuperators
....Refractories
....Rewashers (Screw)
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....Roofing Tile Machines
....Sand Drags
....Sand & Gravel Plants
....Sand Lime Brick Machinery
....Sand Settling Tanks
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....Screens (Revolving, Vibrating, Etc.)
....Seal Rings
....Septic Tank Molds
....Sewer Pipe Machines
....Shovels (Power)
....Silos (Storage)
....Silo Stave Machines
....Slakers (Rotary)
....Slurry Mixers
....Slurry Pumps
....Slurry Separators
....Slurry Thickeners
....Soft Stone Eliminators
....Speed Reducers
....Structural Steel Fabrication
....Tampers (Hand & Power)
....Tanks (Storage)
....Tires
....Tractors
....Transit Mixers
....Trucks (Agitator)
....Trucks (Dump)
....Trucks (Industrial)
....Trucks (Mixer Body)
....Unloaders
....Unloaders (Boat)
....Unloaders (Box Car)
....V-Belting
....Vibrators (Bin)
....Wagons (Dump)
....Wall Forms & Machines (Concrete)
....Washers (Sand, Gravel & Stone)
....Welding & Cutting Equipt.
....Well Curbing Mach. & Molds
....Wire Cloth
....Wire (Copper, Iron & Steel)
....Wire Rope
....Wire Rope Fittings

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Individual _____ *Title* _____
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A MOUTHFUL AT EVERY BITE
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ALL METALS ALL MESHES
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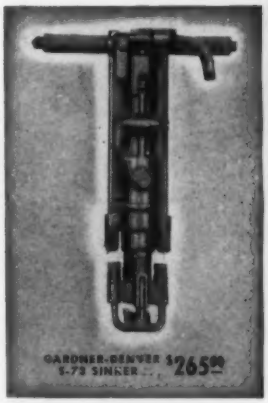

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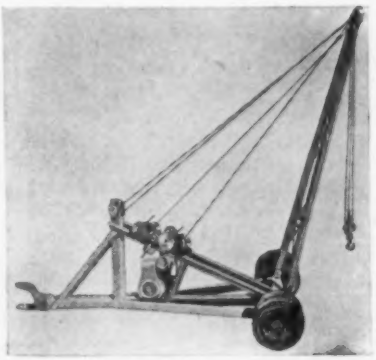

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with

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FIVE-YARD

120-B

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